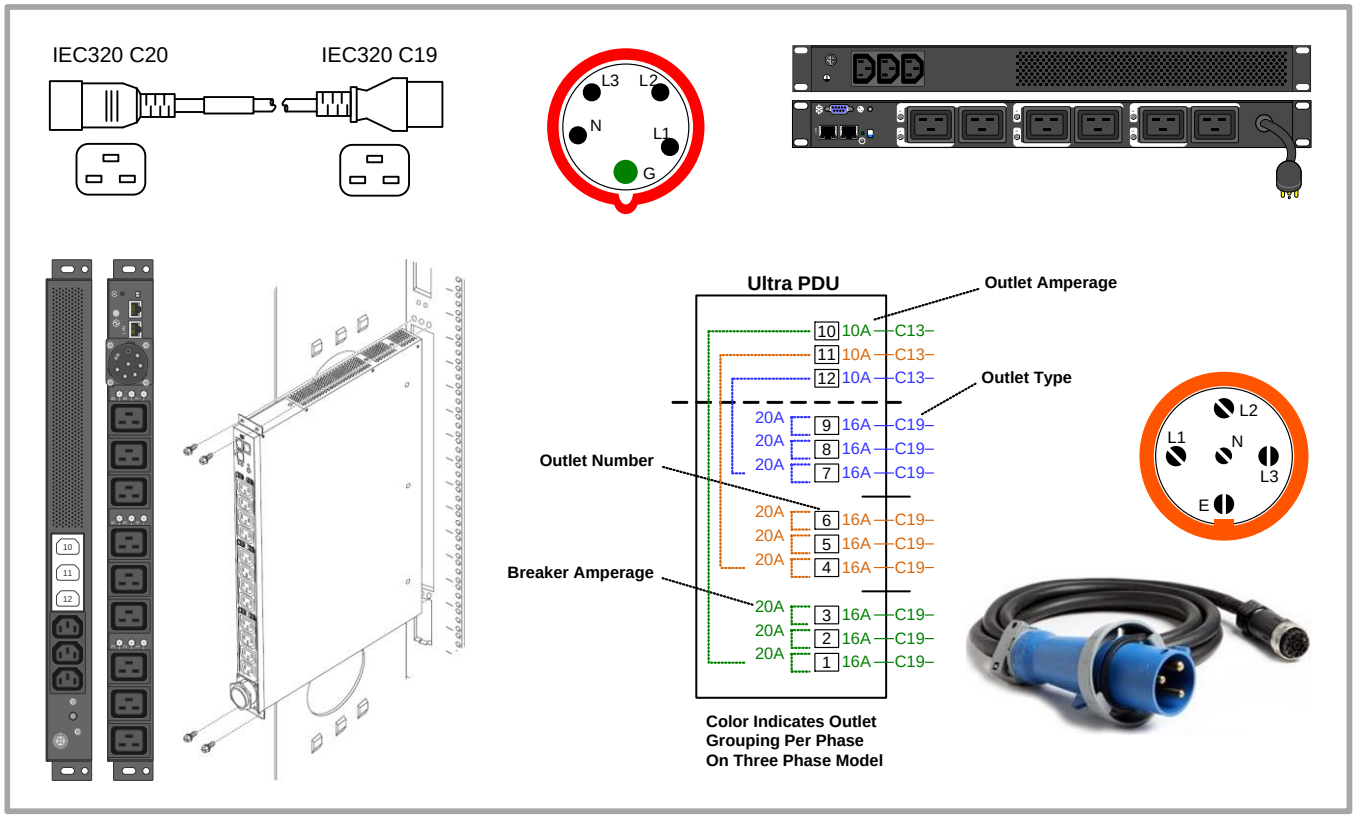
A Guide to IBM System x Power Distribution Units (PDU)

International Version



Authors: William S. Champion
wchamp@us.ibm.com

Matthew R. Archibald
archibam@us.ibm.com

Version: 2.3.2
Date: June 27, 2014

The user of this document is responsible for obtaining the latest copy prior to use. Obsolete copies may be archived and used for reference purposes only. The latest version of this document is located at:
http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101615

© IBM Corporation 2014

Revision History

1.0 – December 17, 2009	Initial Release
1.0.1 – March 5, 2010	Correct typos in Introduction section, updated link to Helpful Links section
1.0.2 – March 31, 2010	Update to Label Rating section
1.3.0 – April 21, 2010	Added Switched and Monitored PDU section
1.3.1 – May 21, 2010	Update to Label Rating section
1.3.2 – June 10, 2010	Fix Table of Contents error
1.3.3 – July 20, 2010	Change Table of Contents format, updated PDU Installation Manuals links, and Help Links section
2.0.0 – October 20, 2010	Major format change to make navigation easier. Updates to Line Cords and Plugs section. New section added, PDU Mounting Options. New Basic 0U PDUs added.
2.1.0 – January 26, 2011	New Switched & Monitored PDUs added. Update to line cord information, helpful links, and IEC 309 Pin & Sleeve Plug Decode section.
2.1.1 – February 8, 2011	Updated pictures for some of the new Switched & Monitored PDUs, System x server label ratings, and look/feel of tables.
2.1.2 – March 1, 2011	Update line cord information for Universal Rack PDU 39Y8953 from 32A to 16A.
2.1.3 – March 15, 2011	Correct Front End PDU 39Y8936 from Australia to S Korea and 39Y8937 from S Korea to Australia.
2.2.0 – August 12, 2011	Show PDU 71762MX as being withdrawn. List statistics the Switched and Monitored PDUs gather. Added navigational aids and circuit capacities section to Introduction. Updated images of 46M4002 and 46M4004 PDUs. Added withdrawn PDUs section to the Introduction. Update information and diagrams for Front End PDU mounting options.
2.3.0 – June 20, 2012	Update to Label Rating section to include new systems. Add feature code information for PDUs. Updated Brazilian line cord information from standard NBR 6147 to NBR 14136 for the 39Y8960 PDU.
2.3.1 – February 03, 2014	Updated server label ratings in Reference section.
2.3.2 – June 27, 2014	New 240V/380V DC PDU added, IBM Basic PDUs section added, new 90A line cord added to Line Cord section, and Rong Feng RF-203P Connector added to Reference section.

Contributors:

Jason Daniel, IBM System x Product Engineer – jdaniel@us.ibm.com

Notices:

This paper is intended to provide information regarding IBM® System x™ Power Distribution Units (PDU). It discusses findings based on configurations that were created and tested under laboratory conditions. These findings may not be realized in all customer environments, and implementation in such environments may require additional steps, configurations and performance analysis. The information herein is provided "AS IS" with no warranties, express or implied. This information does not constitute a specification or form part of the warranty for any IBM or non-IBM products.

Information in this document was developed in conjunction with the use of the equipment specified and is limited in application to those specific hardware and software products and levels.

The information contained in this document has not been submitted to any formal IBM test and is distributed **as is**. The use of this information or the implementation of these techniques is a customer responsibility and depends on the customer's ability to evaluate and integrate them into the customer's operational environment. While each item may have been reviewed by IBM for accuracy in a specific situation, there is no guarantee that the same or similar results will be obtained elsewhere. Customers attempting to adapt these techniques to their own environments do so at their own risk.

IBM may not officially support techniques mentioned in this document. For questions regarding officially supported techniques, please refer to the product documentation, announcement letters or contact the IBM Support Line at 1-800-IBM-SERV.

This document makes references to vendor-acquired applications or utilities. It is the customer responsibility to obtain licenses of these utilities prior to their usage.

© Copyright International Business Machines Corporation 2009, 2010, 2011, 2012, and 2014. All rights reserved. U.S. Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Table of Contents

TABLE OF CONTENTS **3**

INTRODUCTION **5**

How to Use This Guide 5
Withdrawn PDUs 5

IBM BASIC PDUS (NON-MONITORED) **6**

IBM Universal Rack PDU 7
IBM Front End PDU 8
IBM DPI® Enterprise PDU – C13 9
IBM DPI Enterprise PDU 10
IBM DPI Ultra Density Enterprise PDU 11
IBM 0U 24 C13 PDU 12
IBM 0U 12 C19/12 C13 PDU 13

IBM MONITORED PDUS **15**

IBM DPI Enterprise PDU+ - C13 16

IBM SWITCHED AND MONITORED PDUS **17**

IBM Switched and Monitored (Managed) PDUs Gathered Statistics *17*
IBM 1U 12 C13 Switched and Monitored PDU 18
IBM 1U 9 C19 / 3 C13 Switched and Monitored PDU 19
IBM 0U 24 C13U Switched and Monitored PDU 20
IBM 0U 12 C19/12 C13 Switched and Monitored PDU 21

LINE CORDS AND PLUGS **22**

Universal Rack PDU (39Y8952) 230V (CEE7-VII Europe) 22
Universal Rack PDU (39Y8953) 230V (Denmark/Switz. IEC 309 P+N+G) 22
Universal Rack PDU (39Y8954) 220V (Israel SI-32) 22
Universal Rack PDU (39Y8955) 230V (Italy CEI 23-16) 23
Universal Rack PDU (39Y8956) 220-250V (South Africa SABS 164) 23
Universal Rack PDU (39Y8957) 230V (UK BS 1363/A) 23
Universal Rack PDU (39Y8958) 230-240V (AUS/NZ 3112 Australia/NZ) 24
Universal Rack PDU (39Y8959) 220V (China GB 2099.1) 24
Universal Rack PDU (39Y8960) 220-240V (Brazil NBR 14136) 24
Universal Rack PDU (39Y8961) 230V (India IS 6538) 25
Universal Rack PDU (39Y8962) 220V (Argentina IRAM 2073) 25
Universal Rack PDU 16A/200-240V (IEC320 C19 to C20) 25
Front End (39Y8934) 220-240V / 32A Cord (IEC 309 P+N+G) 26
Front End (39Y8935) 220-240V / 63A Cord (IEC 309 P+N+G) 26
Front End (39Y8936) 220V / 30A Cord (KSC 8305 30A) 27
Front End (39Y8937) 230V / 32A Cord (AUS/NZ 3112 32A) 27
40K9611 - IBM DPI 32A Cord (IEC 309 3P+N+G) 28
Re-termination in Australia/New Zealand *28*
40K9612 - IBM DPI 32A Cord (IEC 309 P+N+G) 29
40K9613 – IBM DPI 63A Cord (IEC 309 P+N+G) 29
40K9617 – IBM DPI 32A Cord (AUS/NZ 3112 32A) 30
40K9618 – IBM DPI 30A Cord (KSC 8305 30A) 30
Attached 16A 3ph Cord (IEC309 3P+N+G) 31
Attached 32A 1ph Cord (IEC309 P+N+G) 31
Attached 32A 3ph Cord (IEC309 3P+N+G) 32

PDU MOUNT OPTIONS **33**

Universal PDU Mount Options 33

© IBM Corporation 2012

Front End PDU Mount Options 35
Enterprise Shallow PDU Mount Options 39
Enterprise Deep PDU Mount Options 41
Switched PDU Mount Options 43
Zero U PDU Mount Options 45

IBM System x Rack Types 48

IBM Enterprise Rack (42U) Installation Options 49
IBM Enterprise Rack Side Bays 50
Standard Rack (47U) Installation Options 51
IBM Standard Rack Side Bay 52
IBM Standard Rack (42U) Installation Options 53
IBM Standard Rack (25U) Installation Options 54

Reference Material 55

IBM Flex System Enterprise Chassis Label Rating 55
IBM NeXtScale System Chassis Label Rating 55
IBM BladeCenter Chassis Label Rating 55
IBM System x Top of Rack Ethernet Switch Label Rating 55
IBM System x Server Label Rating 56
IBM System x Server Label Rating – Continued 57
IBM Storage Label Rating 57
IBM iDataPlex Chassis Label Rating 58
IBM iDataPlex Chassis Label Rating – Continued 59
IBM xSeries Server Label Rating 59
IEC 309 Pin & Sleeve Plug Decode 60
Ingress Protection (IP) Decode 60
IEC 320 Connectors 61
32A Three Phase Wye Power Calculations 61
IBM PDU Installation Manuals 62
Helpful Links 62

© IBM Corporation 2012

Introduction

Only IBM System x Power Distribution Units (PDUs) that are currently marketed in internationally are included in this guide. The intent of this guide is to provide PDU information needed in planning power requirements.

This guide is best used in softcopy form, since it contains hyperlinks for navigation. This document can still be used in hardcopy as reference only. You can obtain the latest copy of this document at this web site: http://www-03.ibm.com/systems/bladecenter/resources/powerconfig.html

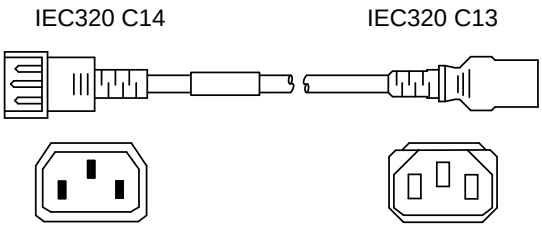
How to Use This Guide

First, decide if Switched & Monitored, Monitored, or Non-monitored PDUs are needed. A table is provided for Switched & Monitored, Monitored, or Non-monitored PDUs that can be used as a decision tree. Links are provided in the tables to PDU and line cord details for each item.

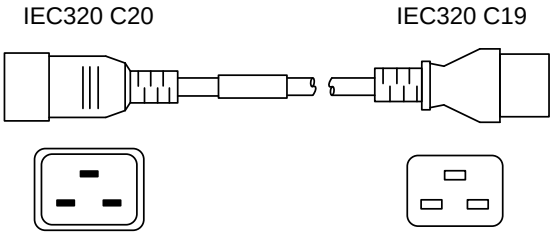
Links to the PDU types:

IBM Basic PDUs (Non-monitored) on page 6
IBM Monitored PDUs on page 15
IBM Switched and Monitored PDUs on page 17

IBM Rack Mounted Server Power Cords



IBM BladeCenter Power Cords



Withdrawn PDUs

PDU	Option Number	Replacement PDU
Ultra Density Enterprise. PDU+	71762MX	46M4002 on page 19

© IBM Corporation 2012

IBM Basic PDUs (Non-monitored)

IBM Basic PDUs do not have the ability to collect power statistics or control the outlets remotely.

PDU	Option Number	Phase	Voltage	Line Cord	Number / Type of Outlet	Page
Universal Rack	39Y8952	1ph	230VAC	16A* CEE7-VII Europe	7 / C13	7
	39Y8953		230VAC	16A* Denmark/Switz. IEC309 P+N+G		
	39Y8954		220VAC	16A* Israel SI-32		
	39Y8955		230VAC	16A* Italy CEI 23-16		
	39Y8956		220-250VAC	16A* South Africa SABS 164		
	39Y8957		230VAC	13A* UK BS 1363/A		
	39Y8958		230-240VAC	15A* AUS/NZ 3112		
	39Y8959		220VAC	16A* China GB 2099.1		
	39Y8960		100-127VAC	16A* Brazil NBR 14136		
	39Y8961		230VAC	16A* India IS 6538		
	39Y8962		220VAC	16A* Argentina IRAM 2073		
	All **		100-250VAC	16A* IEC320 C19 to C20		
Front End	39Y8934	1ph	220-240VAC	32A IEC 309 P+N+G	3 / C19	8
	39Y8935			63A IEC 309 P+N+G		
	39Y8936		230-240VAC	30A KSC 8305		
	39Y8937		220VAC	32A AUS/NZ 3112		
DPI Enterprise C13	39Y8941	1ph	220-240VAC	32A IEC 309 P+N+G	12 / C13	9
				63A IEC 309 P+N+G		
			230-240VAC	32A AUS/NZ 3112		
			220VAC	30A KSC 8305		
DPI Enterprise	39Y8948	1ph	220-240VAC	32A IEC 309 P+N+G	6 / C19	10
				63A IEC 309 P+N+G		
			230-240VAC	32A AUS/NZ 3112		
			220VAC	30A KSC 8305		
		3ph Y	380-415VAC	32A (32A/ph) IEC 309 3P+N+G		
DPI Ultra Density Enterprise	71762NX	1ph	220-240VAC	32A IEC 309 P+N+G	9 / C19 3 / C13	10
				63A IEC 309 P+N+G		
			230-240VAC	32A AUS/NZ 3112		
			220VAC	30A KSC 8305		
		3ph Y	380-415VAC	32A (32A/ph) IEC 309 3P+N+G		
0U 24 C13	46M4122	3ph Y	380-415VAC	16A (16A/ph) IEC 309 3P+N+G	24 / C13	12
	46M4131	1ph	200-240VAC	32A IEC 309 P+N+G		
0U 12 C19/12 C13	46M4143	3ph Y	380-415VAC	32A (32A/ph) IEC 309 3P+N+G	12 / C19 12 / C13	13
1U Higher Voltage DC PDU	44T0966	–	240V-380VDC	90A DC Hardwired (i.e. no plug)	6 / Rong Feng RF-203P	14

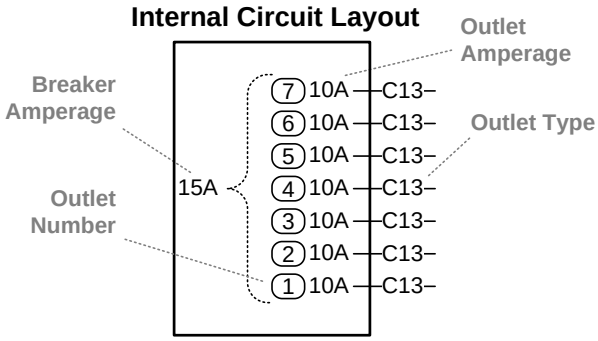
** - The Universal Rack PDU has a 15A a limit due to all the outlets are connected to a single 15A internal breaker.*
*** - This line cord comes with all the Universal Rack PDUs in addition to country specific line cord.*

***Note:** ph indicates phase (1 or 3), Δ indicates three phase delta, and Y Indicates three phase WYE*

© IBM Corporation 2012

IBM Universal Rack PDU

39Y8952, 39Y8953, 39Y8954, 39Y8955, 39Y8956, 39Y8957, 39Y8958, 39Y8959, 39Y8960, 39Y8961, 39Y8962



Input Line Cords By PDU Model

See Page 22 for 39Y8952 Line Cord Information
See Page 22 for 39Y8953 Line Cord Information
See Page 22 for 39Y8954 Line Cord Information
See Page 23 for 39Y8955 Line Cord Information
See Page 23 for 39Y8956 Line Cord Information
See Page 23 for 39Y8957 Line Cord Information
See Page 24 for 39Y8958 Line Cord Information
See Page 24 for 39Y8959 Line Cord Information
See Page 24 for 39Y8960 Line Cord Information
See Page 25 for 39Y8961 Line Cord Information
See Page 25 for 39Y8962 Line Cord Information
See Page 25 for IEC320 C19 to C20 Line Cord Information

FC: 5954 = 39Y8952
FC: 5955 = 39Y8953
FC: 5956 = 39Y8954
FC: 5957 = 39Y8955
FC: 5958 = 39Y8956
FC: 5959 = 39Y8957
FC: 5960 = 39Y8958
FC: 5961 = 39Y8959
FC: 5953 = 39Y8960
FC: 5962 = 39Y8961
FC: 5952 = 39Y8962

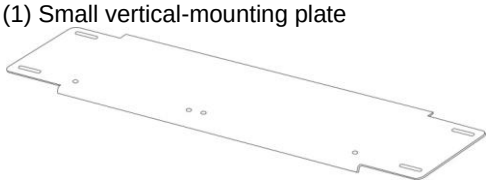
Note: The line cord IEC320 C19 to C20 Line Cord on page 25 comes with all the Universal Rack PDUs in addition to country specific line cord.

Monitorable: No
Switched Outlets: No
Ground Screw: No

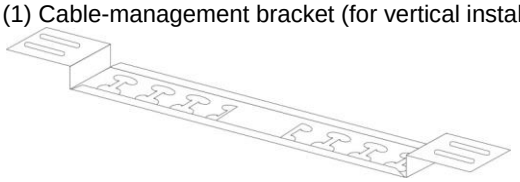
See the **Universal Rack PDU Mounting Options** section on page 33 for mounting option details.

Accessory Kit

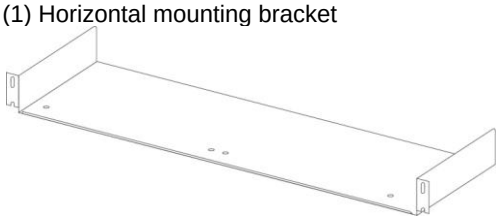
(1) Small vertical-mounting plate



(1) Cable-management bracket (for vertical installations)



(1) Horizontal mounting bracket



(1) 1U blank filler panel

Miscellaneous hardware kit (for attaching the Rack PDU to a mounting plate or bracket and installing the Rack PDU in a rack cabinet) and cable straps

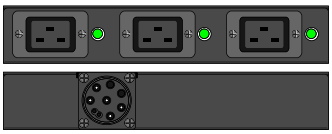
For an overview of IBM Basic PDUs, go back to the beginning of this section **IBM Basic PDUs** on page 6.

© IBM Corporation 2012

IBM Front End PDU

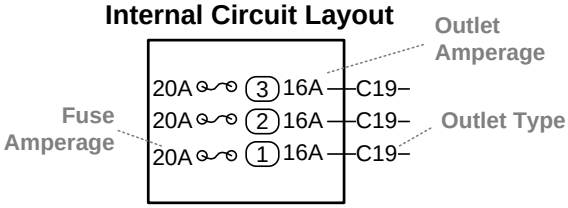
39Y8934, 39Y8935, 39Y8938, 39Y8937

Front Panel



Back Panel

Internal Circuit Layout



Input Line Cords By PDU Model – Line cord comes with the PDU

39Y8934 – IBM DPI IEC 309 P+N+G (2.5m) line cord
32A / 220-240VAC Single Phase

39Y8935 – IBM DPI IEC 309 P+N+G (2.5m) line cord
63A 220V-240VAC Single Phase

FC: A11V = 39Y8934
FC: A11W = 39Y8935

39Y8936 – IBM DPI KSC 8305 30A (2.5m) line cord
30A 230VAC Single Phase

39Y8937 – IBM DPI AS/NZS 3112 32A (2.5m) line cord
32A 220VAC Single Phase

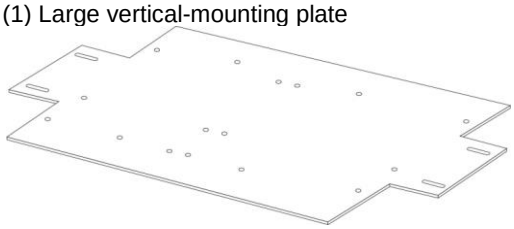
FC: A11Y = 39Y8936
FC: A11X = 39Y8937

Monitorable: No
Switched Outlets: No
Ground Screw: No

See the **Front End PDU Mounting Options** section on page 35 for mounting option details.

Accessory Kit

(1) Large vertical-mounting plate



(1) One country or region-specific power cord

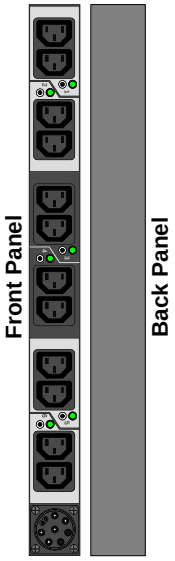
Miscellaneous hardware kit (for attaching the Front-end PDU to a mounting plate and installing the Front-end PDU in a rack cabinet) and cable straps

For an overview of IBM Basic PDUs, go back to the beginning of this section **IBM Basic PDUs** on page 6.

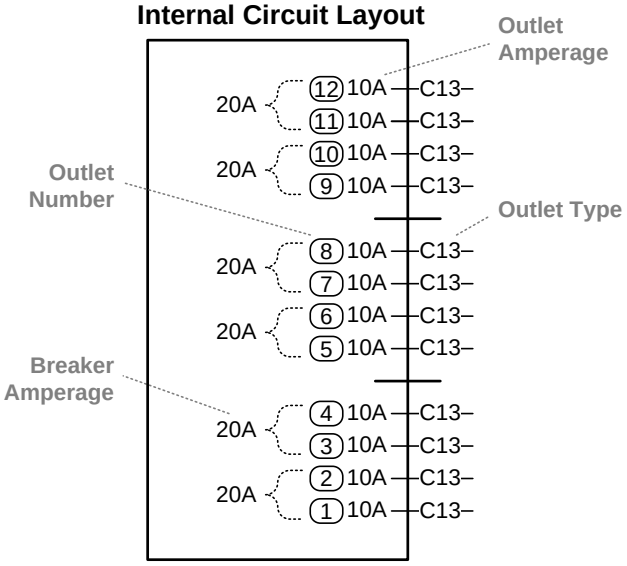
© IBM Corporation 2012

IBM DPI® Enterprise PDU – C13

39Y8941



Internal Circuit Layout



Input Line Cords

40K9611 – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

40K9612 – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240VAC Single Phase

FC: 6016 = 39Y8941 + 40K9611
FC: 6014 = 39Y8941 + 40K9612

40K9613 – IBM DPI IEC 309 P+N+G (4.3m) line cord
63A / 220V-240VAC Single Phase

40K9617 – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A / 220VAC Single Phase

40K9618 – IBM DPI KSC 8305 30A (4.3m) line cord
30A / 230VAC Single Phase

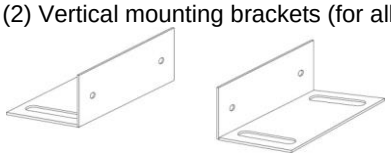
FC: 6015 = 39Y8941 + 40K9613
FC: 6017 = 39Y8941 + 40K9617
FC: 6018 = 39Y8941 + 40K9618

Monitorable: No
Switched Outlets: No
Ground Screw: Yes

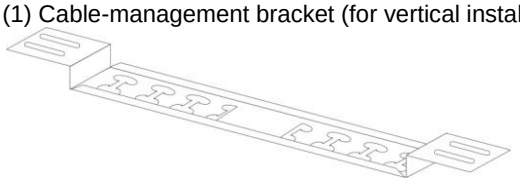
See the **Enterprise Shallow PDU Mounting Options** section on page 39 for mounting option details.

Accessory Kit

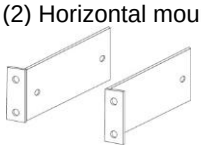
(2) Vertical mounting brackets (for all rack cabinets)



(1) Cable-management bracket (for vertical installations)



(2) Horizontal mounting brackets



(1) 1U blank filler panel

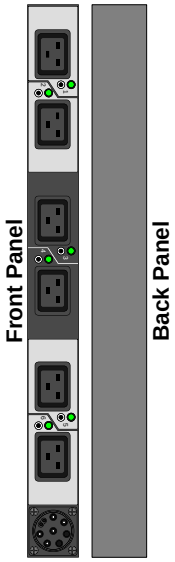
Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

For an overview of IBM Basic PDUs, go back to the beginning of this section **IBM Basic PDUs** on page 6.

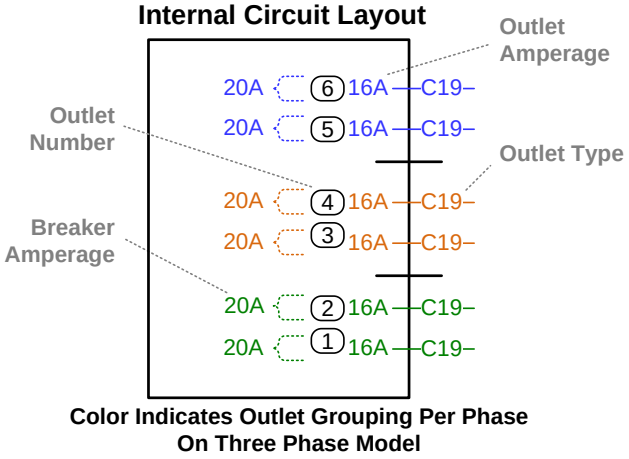
© IBM Corporation 2012

IBM DPI Enterprise PDU

39Y8948



Internal Circuit Layout



Color Indicates Outlet Grouping Per Phase On Three Phase Model

Input Line Cords

40K9611 – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

40K9612 – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240VAC Single Phase

40K9613 – IBM DPI IEC 309 P+N+G (4.3m) line cord
63A / 220V-240VAC Single Phase

40K9617 – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A / 220VAC Single Phase

40K9618 – IBM DPI KSC 8305 30A (4.3m) line cord
30A / 230VAC Single Phase

FC: 6066 = 39Y8948 + 40K9611
FC: 6064 = 39Y8948 + 40K9612

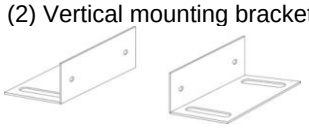
FC: 6065 = 39Y8948 + 40K9613
FC: 6067 = 39Y8948 + 40K9617
FC: 6068 = 39Y8948 + 40K9618

Monitorable: No
Switched Outlets: No
Ground Screw: Yes – On Back Panel

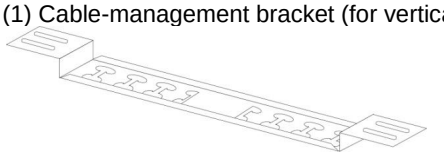
See the **Enterprise Shallow PDU Mounting Options** section on page 39 for mounting option details.

Accessory Kit

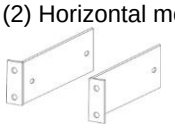
(2) Vertical mounting brackets (for all rack cabinets)



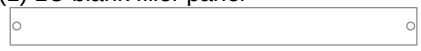
(1) Cable-management bracket (for vertical installations)



(2) Horizontal mounting brackets



(1) 1U blank filler panel

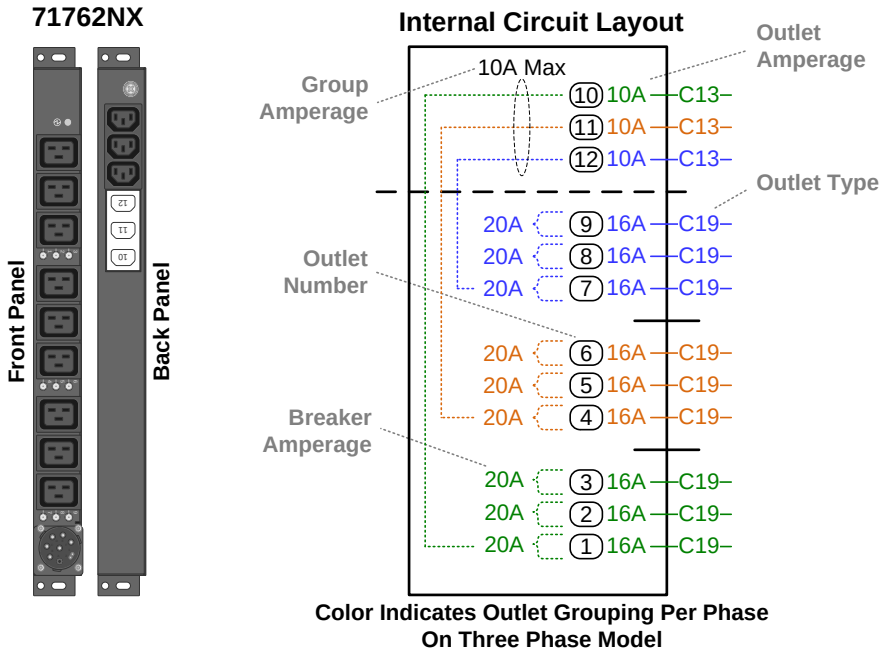


Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

For an overview of IBM Basic PDUs, go back to the beginning of this section **IBM Basic PDUs** on page 6.

© IBM Corporation 2012

IBM DPI Ultra Density Enterprise PDU



Color Indicates Outlet Grouping Per Phase On Three Phase Model

Input Line Cords

40K9611 – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

40K9612 – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240VAC Single Phase

40K9613 – IBM DPI IEC 309 P+N+G (4.3m) line cord
63A / 220V-240VAC Single Phase

40K9617 – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A / 220VAC Single Phase

40K9618 – IBM DPI KSC 8305 30A (4.3m) line cord
30A / 230VAC Single Phase

FC: 6504 = 71762NX + 40K9611
FC: 6502 = 71762NX + 40K9612

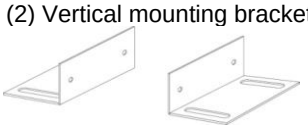
FC: 6503 = 71762NX + 40K9613
FC: 6505 = 71762NX + 40K9617
FC: 6506 = 71762NX + 40K9618

Monitorable: No
Switched Outlets: No
Ground Screw: Yes – On Back Panel

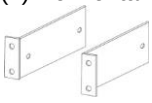
See the **Enterprise Deep PDU Mounting Options** section on page 41 for mounting option details.

Accessory Kit

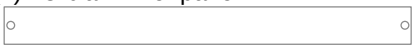
(2) Vertical mounting brackets (for all rack cabinets)



(2) Horizontal mounting brackets

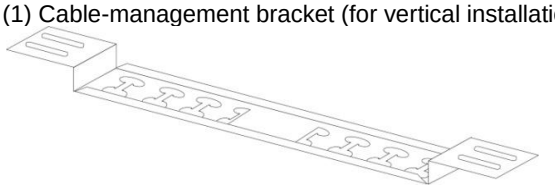


(1) 1U blank filler panel

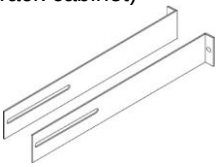


Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

(1) Cable-management bracket (for vertical installations)



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)

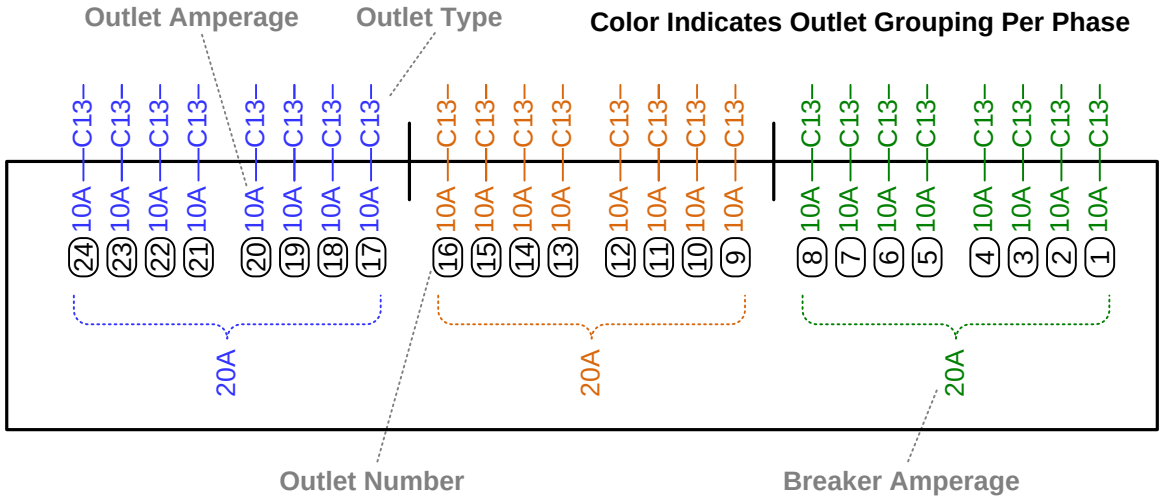


For an overview of IBM Basic PDUs, go back to the beginning of this section **IBM Basic PDUs** on page 6.

© IBM Corporation 2012

IBM 0U 24 C13 PDU

46M4122 & 46M4131


Outlet Amperage
Outlet Type
Color Indicates Outlet Grouping Per Phase
C13 10A 24 23 22 21 20 19 18 17
C13 10A 16 15 14 13 12 11 10 9
C13 10A 8 7 6 5 4 3 2 1
20A
20A
20A
Outlet Number
Breaker Amperage

Input Line Cords

46M4122 – PDU with attached line cord

Attached 3.0 meter line cord
IEC-309 3P+N+G 16A (16A / Phase)
380-415VAC Three Phase Wye
48A Total Circuit Capacity

FC: 5922 = 46M4122

46M4131 – PDU with attached line cord

Attached 3.0 meter line cord
IEC 309 P+N+G 32A / 220-240VAC Single Phase

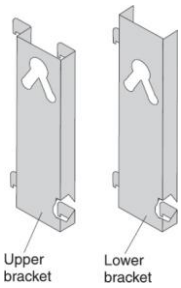
FC: 5925 = 46M4131

Monitorable: No
Switched Outlets: No
Ground Screw: Yes – On Front Panel

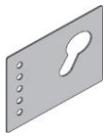
See the **Zero U PDU Mounting Options** section on page 45 for mounting option details.

Accessory Kit

(2) Mount bracket for IBM Enterprise Racks (Types 1410, 9308) (one upper bracket and one lower bracket)



(2) Mount bracket for IBM S2 42U Standard Rack cabinet (Types 9307, 9956)



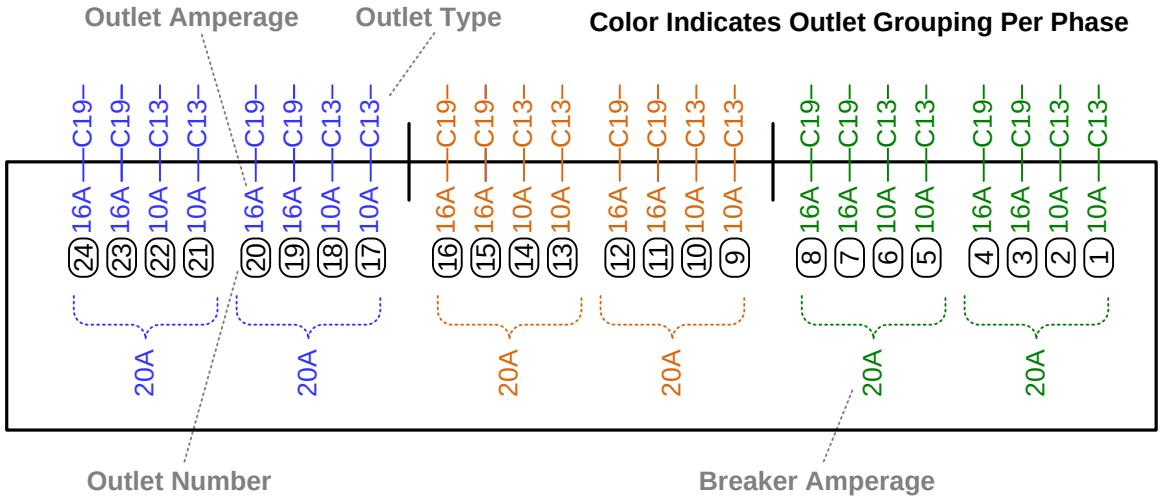
Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing the PDU in a rack cabinet)

For an overview of IBM Basic PDUs, go back to the beginning of this section **IBM Basic PDUs** on page 6.

© IBM Corporation 2012

IBM 0U 12 C19/12 C13 PDU

46M4143



Input Line Cords

Attached 3.0 meter line cord
IEC-309 3P+N+G 32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

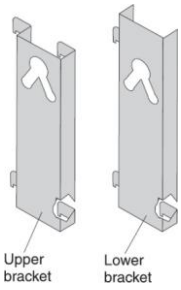
FC: 5927 = 46M4143

Monitorable: No
Switched Outlets: No
Ground Screw: Yes – On Front Panel

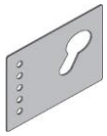
See the **Zero U PDU Mounting Options** section on page 45 for mounting option details.

Accessory Kit

(2) Mount bracket for IBM Enterprise Racks (Types 1410, 9308) (one upper bracket and one lower bracket)



(2) Mount bracket for IBM S2 42U Standard Rack cabinet (Types 9307, 9956)



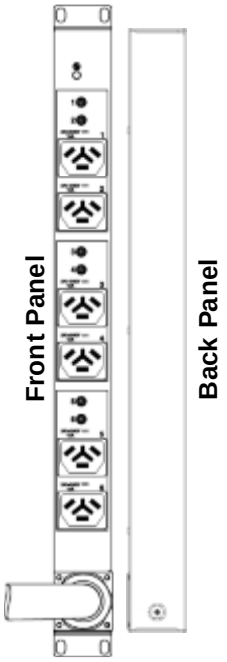
Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing the PDU in a rack cabinet)

For an overview of IBM Basic PDUs, go back to the beginning of this section **IBM Basic PDUs** on page 6.

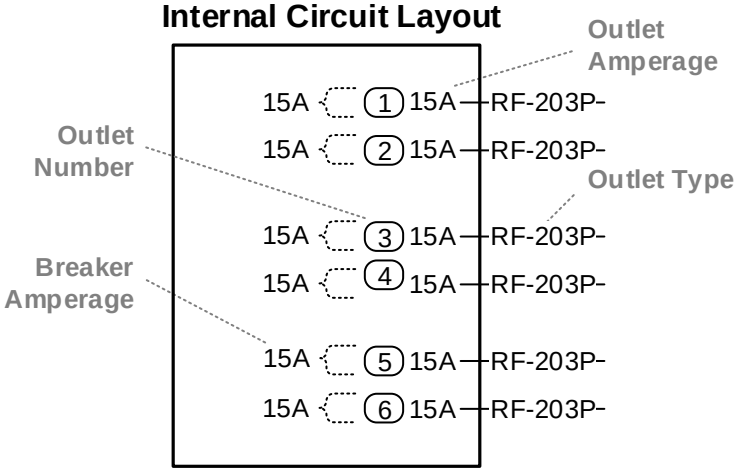
© IBM Corporation 2012

IBM 1U Higher Voltage DC PDU

44T0966



Internal Circuit Layout



Note: RF-203P outlet refers to Rong Feng RF-203P DC outlet.

Input Line Cords

Attached 90A DC line cord
90A@240-380VDC (4.3m) line cord hardwired (i.e. no plug)

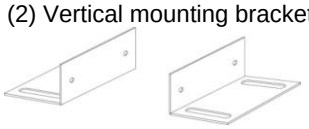
FC: A580 = 44T0966

Monitorable: No
Switched Outlets: No
Ground Screw: Yes – On Back Panel

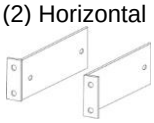
See the **Enterprise Deep PDU Mounting Options** section on page 41 for mounting option details.

Accessory Kit

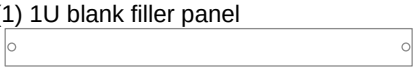
(2) Vertical mounting brackets (for all rack cabinets)



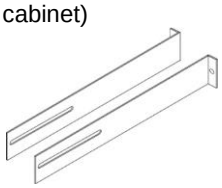
(2) Horizontal mounting brackets



(1) 1U blank filler panel



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

For an overview of IBM Basic PDUs, go back to the beginning of this section **IBM Basic PDUs** on page 6.

© IBM Corporation 2012

IBM Monitored PDUs

IBM Monitored PDUs collect power statistics that can be viewed through PDUs web interface or IBM Active Energy Manager. These PDUs do not have the ability to control the outlets remotely. For IBM PDUs that have the ability to control outlets see the "IBM Switched and Monitored PDUs" section on page 16.

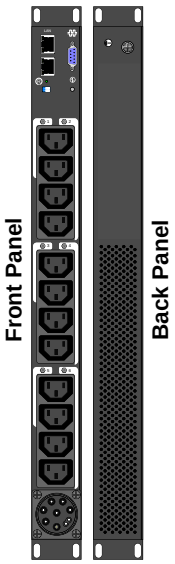
PDU	Option Number	Phase	Voltage	Line Cord (Derated)	Number / Type of Outlet	Page
DPI Enterprise + - C13	39M2816	1ph	220-240VAC	32A IEC 309 P+N+G	12 / C13	16
				63A IEC 309 P+N+G		
			230-240VAC	32A AUS/NZ 3112		
			220VAC	30A KSC 8305		

Note: *ph indicates phase (1 or 3), Δ indicates three phase delta, and Y Indicates three phase WYE*

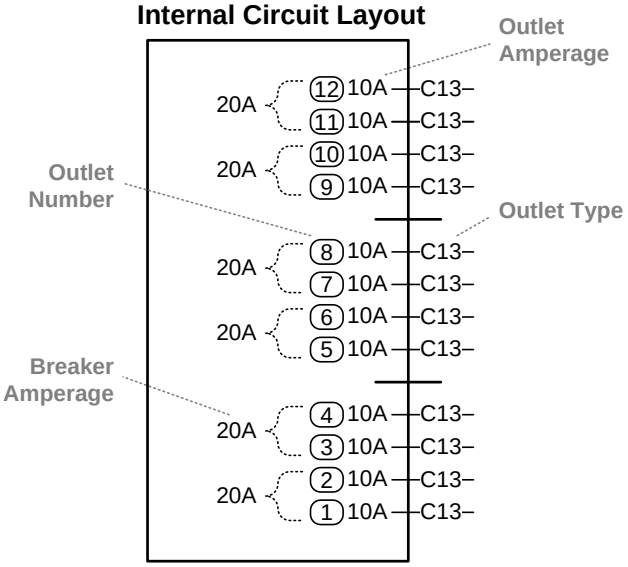
© IBM Corporation 2012

IBM DPI Enterprise PDU+ - C13

39M2816



Internal Circuit Layout



Input Line Cords

40K9611 – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

40K9612 – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240VAC Single Phase

40K9613 – IBM DPI IEC 309 P+N+G (4.3m) line cord
63A / 220V-240VAC Single Phase

40K9617 – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A / 220VAC Single Phase

40K9618 – IBM DPI KSC 8305 30A (4.3m) line cord
30A / 230VAC Single Phase

FC: 6036 = 39M2816 + 40K9611
FC: 6034 = 39M2816 + 40K9612

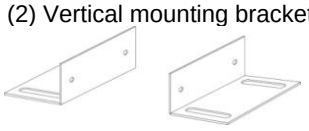
FC: 6035 = 39M2816 + 40K9613
FC: 6037 = 39M2816 + 40K9617
FC: 6038 = 39M2816 + 40K9618

Monitorable: Yes
Switched Outlets: No
Ground Screw: Yes – On Back Panel

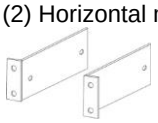
See the **Enterprise Deep PDU Mounting Options** section on page 41 for mounting option details.

Accessory Kit

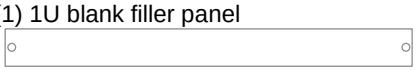
(2) Vertical mounting brackets (for all rack cabinets)



(2) Horizontal mounting brackets

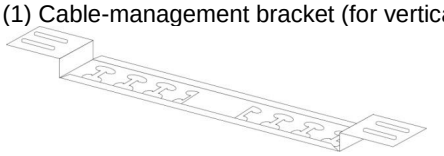


(1) 1U blank filler panel

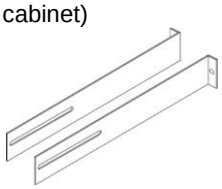


(1) Environmental Monitoring Probe
(1) DB9 to RJ-45 cable
(1) Category 5 Ethernet cable, 6ft/1.8m

(1) Cable-management bracket (for vertical installations)



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

For an overview of IBM Monitored PDUs, go back to the beginning of this section **IBM Monitored PDUs** on page 15.

© IBM Corporation 2012

IBM Switched and Monitored PDUs

IBM Switched and Monitored PDUs collect power statistics and have the ability to control outlets remotely via the PDUs web interface or IBM Active Energy Manager.

PDU	Option Number	Phase	Voltage	Line Cord (Derated)	Number / Type of Outlet	Page
1U 12 C13	46M4004	1ph	220-240VAC	32A IEC 309 P+N+G	12 / C13	18
				63A IEC 309 P+N+G		
			230-240VAC	32A AUS/NZ 3112		
			220VAC	30A KSC 8305		
		3ph Y	380-415VAC	32A (32A/ph) IEC 309 3P+N+G		
1U 9 C19 / 3 C13	46M4002	1ph	220-240VAC	32A IEC 309 P+N+G	9 / C19 3 / C13	18
				63A IEC 309 P+N+G		
			230-240VAC	32A AUS/NZ 3112		
			220VAC	30A KSC 8305		
		3ph Y	380-415VAC	32A (32A/ph) IEC 309 3P+N+G		
0U 24 C13U	46M4119	1ph	220-240VAC	32A IEC 309 P+N+G	24 / C13	19
0U 12 C19/12 C13	46M4137	3ph Y	380-415VAC	32A (32A/ph) IEC 309 3P+N+G	12 / C19 12 / C13	21

Note: *ph indicates phase (1 or 3), Δ indicates three phase delta, and Y Indicates three phase WYE*

IBM Switched and Monitored (Managed) PDUs Gathered Statistics

PDU Input Statistics:

Input Voltage (V) - Present Value, Min, Max
Input Current (A) - Present Value, Min, Max
Power Factor (0.0 - 1.0) - Present Value, Min, Max
Input Frequency (Hz) - Present Value, Min, Max
Input Power (W) - Present Value, Min, Max
Cumulative Kilowatt Hours - Present Value, Min, Max

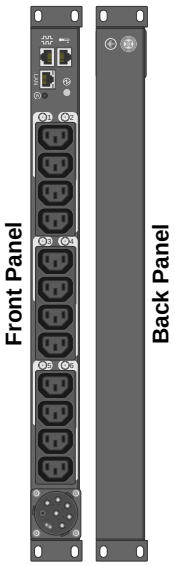
Individual Outlet Statistics:

Output Voltage (V) - Present Value, Min, Max
Output Current (A) - Present Value, Min, Max
Output Power Factor (0.0 - 1.0) - Present Value, Min, Max
Load Watts (W) - Present Value, Min, Max
Cumulative Kilowatt Hours - Present Value, Min, Max

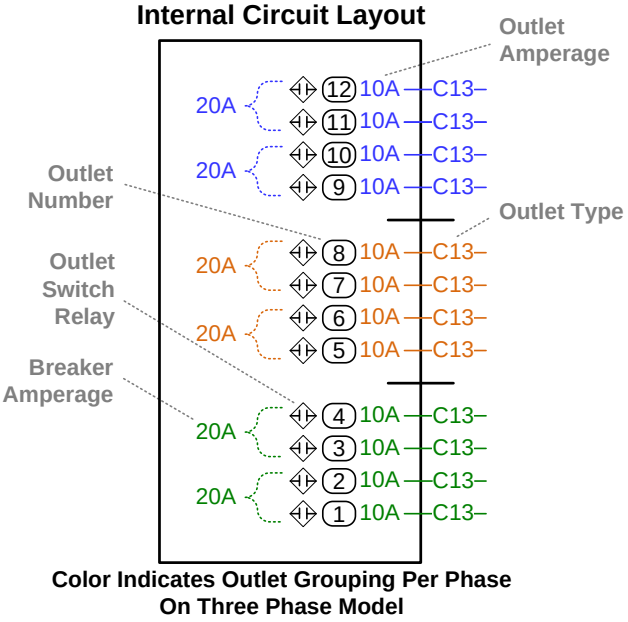
© IBM Corporation 2012

IBM 1U 12 C13 Switched and Monitored PDU

46M4004



Internal Circuit Layout



Color Indicates Outlet Grouping Per Phase On Three Phase Model

Input Line Cords

40K9611 – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

40K9612 – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240VAC Single Phase

40K9613 – IBM DPI IEC 309 P+N+G (4.3m) line cord
63A / 220V-240VAC Single Phase

40K9617 – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A / 220VAC Single Phase

40K9618 – IBM DPI KSC 8305 30A (4.3m) line cord
30A / 230VAC Single Phase

FC: 5912 = 46M4004 + 40K9611
FC: 5910 = 46M4004 + 40K9612

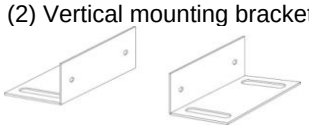
FC: 5911 = 46M4004 + 40K9613
FC: 5913 = 46M4004 + 40K9617
FC: 5914 = 46M4004 + 40K9618

Monitorable: Yes
Switched Outlets: Yes
Ground Screw: Yes – On Back Panel

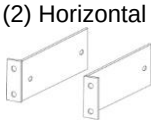
See the **Switched PDU Mounting Options** section on page 41 for mounting option details.

Accessory Kit

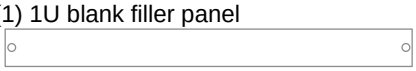
(2) Vertical mounting brackets (for all rack cabinets)



(2) Horizontal mounting brackets

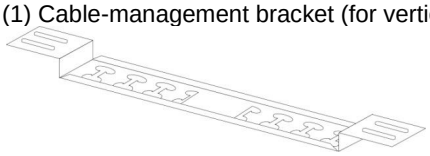


(1) 1U blank filler panel

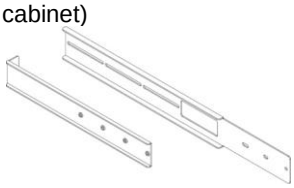


(1) Environmental Monitoring Probe
(1) DB9 to RJ-45 cable
(1) Category 5 Ethernet cable, 6ft/1.8m

(1) Cable-management bracket (for vertical installations)



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



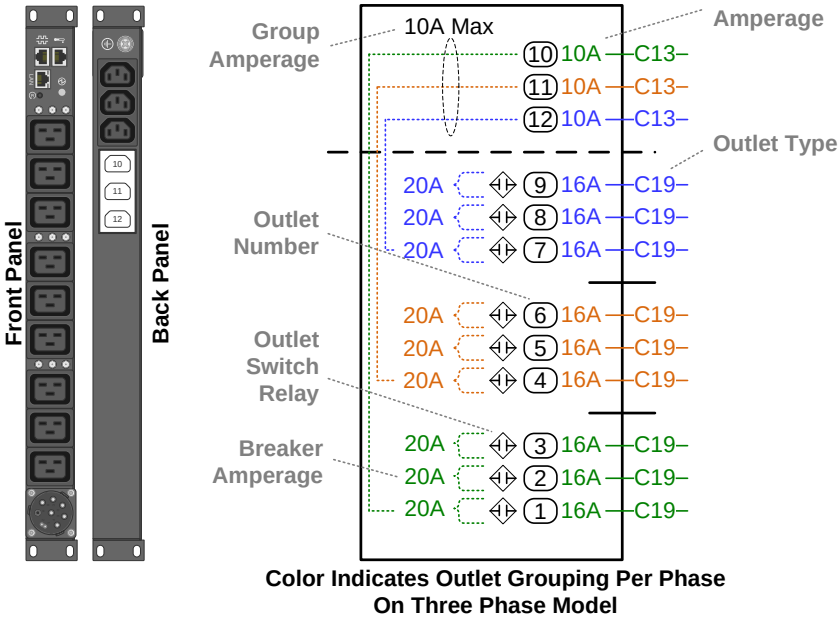
Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

For an overview of IBM Switched and Monitored PDUs, go back to the beginning of this section **IBM Switched and Monitored (Managed) PDUs** on page 17.

© IBM Corporation 2012

IBM 1U 9 C19 / 3 C13 Switched and Monitored PDU

46M4002



Input Line Cords

40K9611 – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

40K9612 – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240VAC Single Phase

FC: 5905 = 46M4002 + 40K9611
FC: 5903 = 46M4002 + 40K9612

40K9613 – IBM DPI IEC 309 P+N+G (4.3m) line cord
63A / 220V-240VAC Single Phase

40K9617 – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A / 220VAC Single Phase

40K9618 – IBM DPI KSC 8305 30A (4.3m) line cord
30A / 230VAC Single Phase

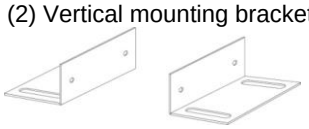
FC: 5904 = 46M4002 + 40K9613
FC: 5906 = 46M4002 + 40K9617
FC: 5907 = 46M4002 + 40K9618

Monitorable: Yes
Switched Outlets: Yes
Ground Screw: Yes – On Back Panel

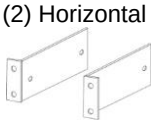
See the **Switched PDU Mounting Options** section on page 41 for mounting option details.

Accessory Kit

(2) Vertical mounting brackets (for all rack cabinets)



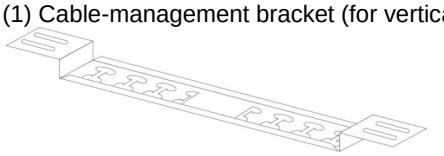
(2) Horizontal mounting brackets



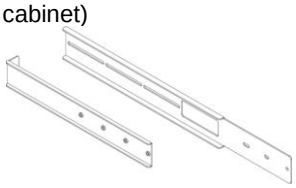
(1) 1U blank filler panel

(1) Environmental Monitoring Probe
(1) DB9 to RJ-45 cable
(1) Category 5 Ethernet cable, 6ft/1.8m

(1) Cable-management bracket (for vertical installations)



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



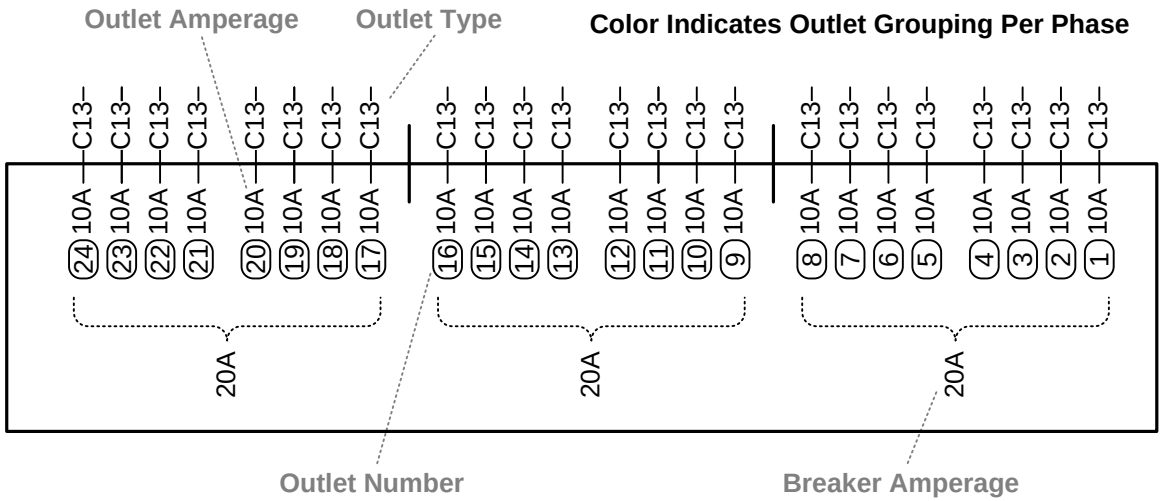
Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

For an overview of IBM Switched and Monitored PDUs, go back to the beginning of this section **IBM Switched and Monitored (Managed) PDUs** on page 17.

© IBM Corporation 2012

IBM 0U 24 C13U Switched and Monitored PDU

46M4119



Input Line Cords

Attached 3.0 meter line cord
IEC 309 P+N+G 32A / 220-240VAC Single Phase

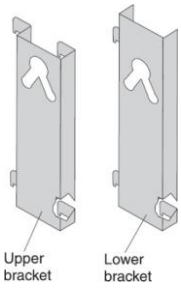
FC: 5930 = 46M4119

Monitorable: Yes
Switched Outlets: Yes
Ground Screw: Yes – On Front Panel

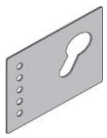
See the **Zero U PDU Mounting Options** section on page 45 for mounting option details.

Accessory Kit

(2) Mount bracket for IBM Enterprise Racks (Types 1410, 9308) (one upper bracket and one lower bracket)



(2) Mount bracket for IBM S2 42U Standard Rack cabinet (Types 9307, 9956)



(1) DB9 to RJ-45 cable

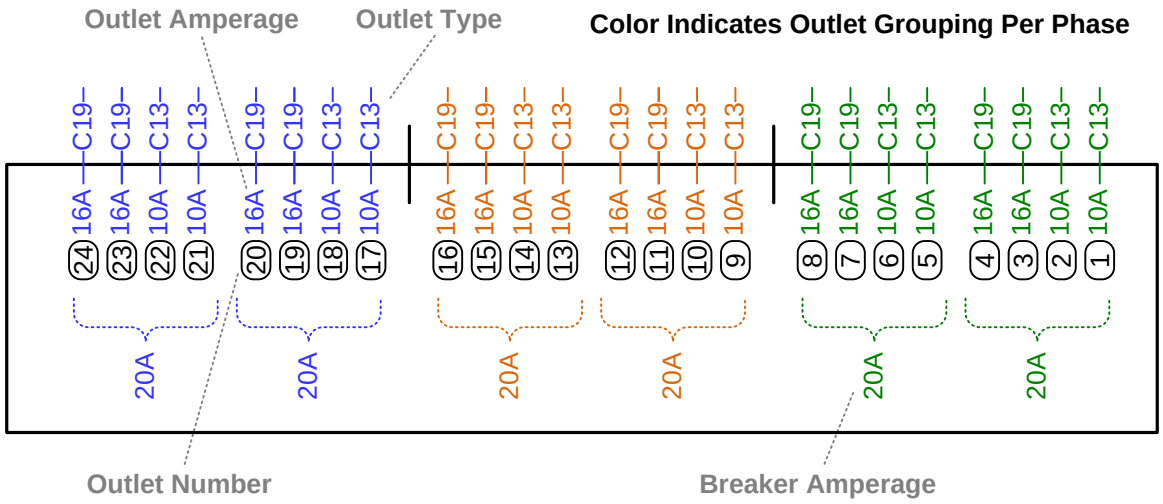
Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing the PDU in a rack cabinet)

For an overview of IBM Switched and Monitored PDUs, go back to the beginning of this section **IBM Switched and Monitored (Managed) PDUs** on page 17.

© IBM Corporation 2012

IBM 0U 12 C19/12 C13 Switched and Monitored PDU

46M4137



Input Line Cords

Attached 3.0 meter line cord
IEC-309 3P+N+G 32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

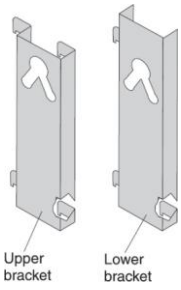
FC: 5932 = 46M4137

Monitorable: Yes
Switched Outlets: Yes
Ground Screw: Yes – On Front Panel

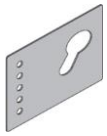
See the **Zero U PDU Mounting Options** section on page 45 for mounting option details.

Accessory Kit

(2) Mount bracket for IBM Enterprise Racks (Types 1410, 9308) (one upper bracket and one lower bracket)



(2) Mount bracket for IBM S2 42U Standard Rack cabinet (Types 9307, 9956)



(1) DB9 to RJ-45 cable

Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing the PDU in a rack cabinet)

For an overview of IBM Switched and Monitored PDUs, go back to the beginning of this section **IBM Switched and Monitored (Managed) PDUs** on page 17.

© IBM Corporation 2012

Line Cords and Plugs

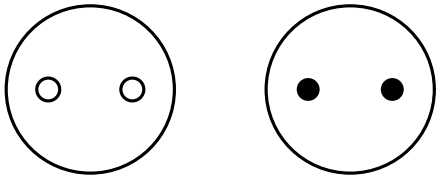
Universal Rack PDU (39Y8952) 230VAC (CEE7-VII Europe)

39M5281 – C19 to CEE7-VII Europe (1.8m) @ 230VAC Single Phase
39M5282 – C19 to CEE7-VII Europe (2.5m) @ 230VAC Single Phase
39M5283 – C19 to CEE7-VII Europe (4.3m) @ 230VAC Single Phase

Used with:

39Y8952 – Universal Rack PDU

Female End **Male End**



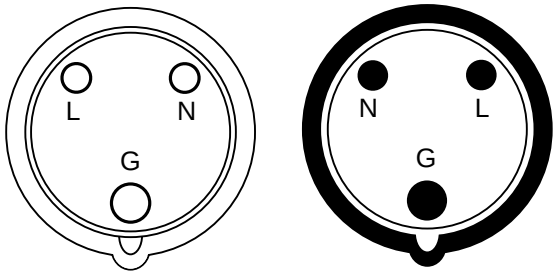
Universal Rack PDU (39Y8953) 230VAC (Denmark/Switz. IEC 309 P+N+G)

39M5321 – C19 to Denmark IEC 309 P+N+G (1.8m) @ 230VAC Single Phase
39M5322 – C19 to Denmark IEC 309 P+N+G (2.5m) @ 230VAC Single Phase
39M5323 – C19 to Denmark IEC 309 P+N+G (4.3m) @ 230VAC Single Phase

Used with:

39Y8953 – Universal Rack PDU

Female Sleeve **Male Sleeve**



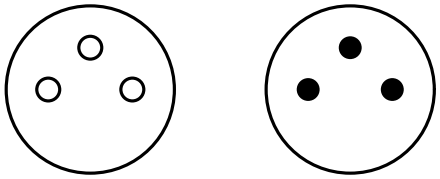
Universal Rack PDU (39Y8954) 220VAC (Israel SI-32)

39M5309 – C19 to Israel SI-32 (1.8m) @ 220VAC Single Phase
39M5310 – C19 to Israel SI-32 (2.5m) @ 220VAC Single Phase
39M5311 – C19 to Israel SI-32 (4.3m) @ 220VAC Single Phase

Used with:

39Y8954 – Universal Rack PDU

Female End **Male End**



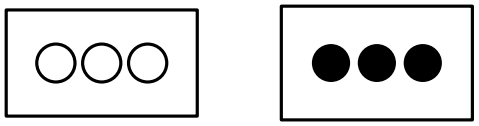
© IBM Corporation 2012

Universal Rack PDU (39Y8955) 230VAC (Italy CEI 23-16)

39M5297 – C19 to Italy CEI 23-16 (1.8m) @ 230VAC Single Phase
39M5298 – C19 to Italy CEI 23-16 (2.5m) @ 230VAC Single Phase
39M5299 – C19 to Italy CEI 23-16 (4.3m) @ 230VAC Single Phase

Used with:
39Y8955 – Universal Rack PDU

Female End **Male End**

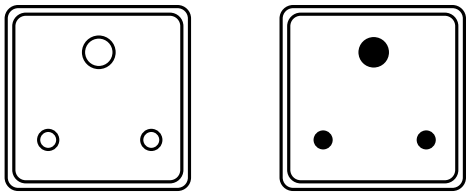


Universal Rack PDU (39Y8956) 220-250VAC (South Africa SABS 164)

39M5290 – C19 to South Africa SABS 164 (2.5m) @ 220-250VAC Single Phase
39M5291 – C19 to South Africa SABS 164 (4.3m) @ 220-250VAC Single Phase

Used with:
39Y8956 – Universal Rack PDU

Female End **Male End**

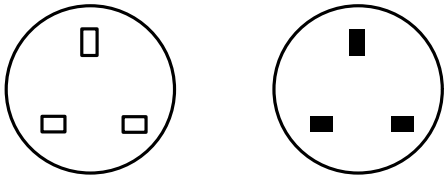


Universal Rack PDU (39Y8957) 230VAC (UK BS 1363/A)

39M5293 – C19 to UK BS 1363/A (1.8m) @ 230VAC Single Phase
39M5294 – C19 to UK BS 1363/A (2.5m) @ 230VAC Single Phase
39M5295 – C19 to UK BS 1363/A (4.3m) @ 230VAC Single Phase

Used with:
39Y8957 – Universal Rack PDU

Female End **Male End**



© IBM Corporation 2012

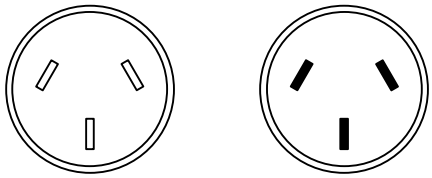
Universal Rack PDU (39Y8958) 230-240VAC (AUS/NZ 3112 Australia/NZ)

39M5329 – C19 to AUS/NZ 3112 Australia/NZ (1.8m) @ 230-240VAC Single Phase
39M5330 – C19 to AUS/NZ 3112 Australia/NZ (2.5m) @ 230-240VAC Single Phase
39M5331 – C19 to AUS/NZ 3112 Australia/NZ (4.3m) @ 230-240VAC Single Phase

Used with:

39Y8958 – Universal Rack PDU

Female End **Male End**



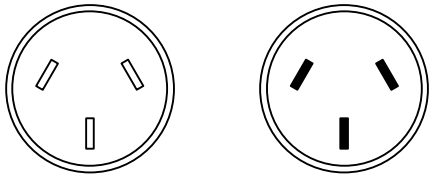
Universal Rack PDU (39Y8959) 220VAC (China GB 2099.1)

39M5353 – C19 to China GB 2099.1 (1.8m) @ 220VAC Single Phase
39M5354 – C19 to China GB 2099.1 (2.5m) @ 220VAC Single Phase
39M5355 – C19 to China GB 2099.1 (4.3m) @ 220VAC Single Phase

Used with:

39Y8959 – Universal Rack PDU

Female End **Male End**



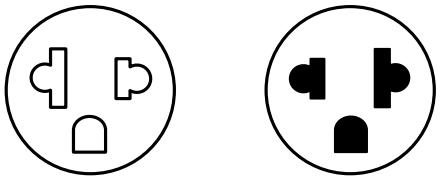
Universal Rack PDU (39Y8960) 220-240VAC (Brazil NBR 14136)

39M5357 – C19 to Brazil NBR 14136 (1.8m) @ 220-240VAC Single Phase
39M5358 – C19 to Brazil NBR 14136 (2.5m) @ 220-240VAC Single Phase
39M5359 – C19 to Brazil NBR 14136 (4.3m) @ 220-240VAC Single Phase

Used with:

39Y8960 – Universal Rack PDU

Female End **Male End**



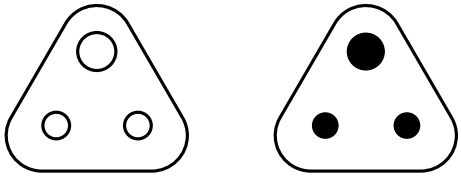
© IBM Corporation 2012

Universal Rack PDU (39Y8961) 230VAC (India IS 6538)

39M5444 – C19 to India IS 6538 (1.8m) @ 230VAC Single Phase
39M5445 – C19 to India IS 6538 (2.5m) @ 230VAC Single Phase
39M5446 – C19 to India IS 6538 (4.3m) @ 230VAC Single Phase

Used with:
39Y8961 – Universal Rack PDU

Female End **Male End**

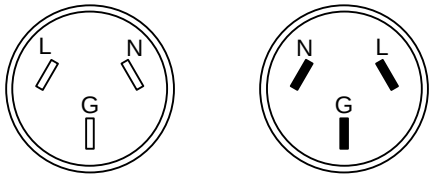


Universal Rack PDU (39Y8962) 220VAC (Argentina IRAM 2073)

39M5341 – C19 to Argentina IRAM 2073 (1.8m) @ 220VAC Single Phase
39M5342 – C19 to Argentina IRAM 2073 (2.5m) @ 220VAC Single Phase
39M5343 – C19 to Argentina IRAM 2073 (4.3m) @ 220VAC Single Phase

Used with:
39Y8962 – Universal Rack PDU

Female End **Male End**



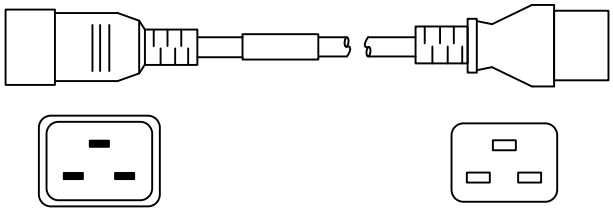
Universal Rack PDU 16A/200-240VAC (IEC320 C19 to C20)

39M5389 - C19 to IEC320 C20 to (2.5m) 16A @ 100-240VAC Single Phase

Used to connect Rack PDU to another PDU with IEC320 C19 outlets. This line cord ships with all Universal Rack PDUs in addition to country specific line cord.

Used with:
39Y8951 – Universal Rack PDU

IEC320 C20 IEC320 C19



Also available:
39M5388 - C19 to IEC320 C20 to (2.0m) 16A @ 100-250VAC Single Phase

© IBM Corporation 2012

Front End (39Y8934) 220-240VAC / 32A Cord (IEC 309 P+N+G)

IEC 309 P+N+G (2.5m) - 32A 220-240VAC Single Phase

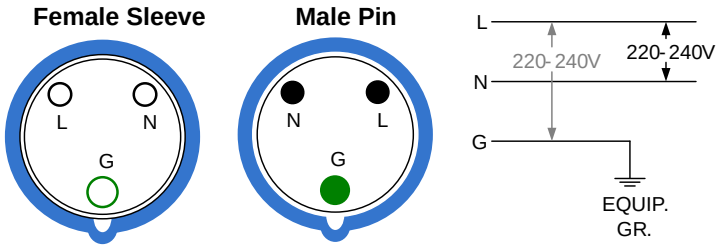
Only a receptacle or a connector is needed to mate with the plug on the PDU input line cord. See section "IEC 309 Pin & Sleeve Plug Decode" on page 60 in this document for further details on IEC309.

Matching receptacle listing 332R6W IP-67 HUBBELL, Hubbell receptacle P/N HBL332R6W
Matching connector listing 332C6W IP-67 HUBBELL, Hubbell connector P/N HBL332C6W

Note that this is not the same cord as the 40K9612 cord. PDU line cord connector pin out is different.

Used with:

39Y8934 – Front End PDU



Front End (39Y8935) 220-240VAC / 63A Cord (IEC 309 P+N+G)

IEC 309 P+N+G (2.5m) - 63A 220- 240VAC Single Phase

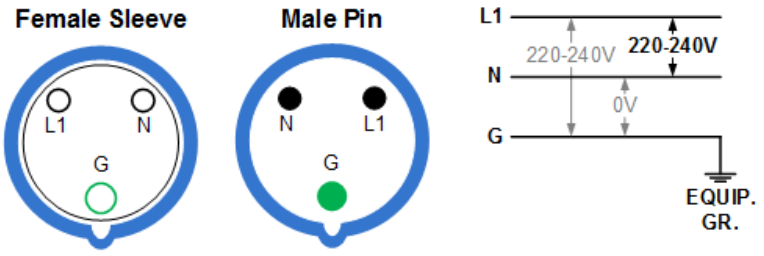
Only a receptacle or a connector is needed to mate with the plug on the PDU input line cord. See section "IEC 309 Pin & Sleeve Plug Decode" on page 60 in this document for further details on IEC309.

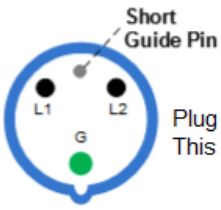
Matching receptacle listing 363R6W IP-67 HUBBELL, Hubbell receptacle P/N HBL363R6W
Matching connector listing 363C6W IP-67 HUBBELL, Hubbell connector P/N HBL363C6W

Note that this is not the same cord as the 40K9613 cord. PDU line cord connector pin out is different.

Used with:

39Y8935 - Front End PDU





Plug may have a short guide pin.
This still makes it a single phase plug.

© IBM Corporation 2012

Front End (39Y8936) 220VAC / 30A Cord (KSC 8305 30A)

P+N+G (Shin Ju P/N SJ-P3302) Korea connector

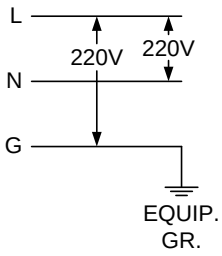
Note that this is not the same cord as the 40K9618 cord. PDU line cord connector pin out is different.

Used with:

39Y8936 - Front End PDU

Female End

Male End



Front End (39Y8937) 230VAC / 32A Cord (AUS/NZ 3112 32A)

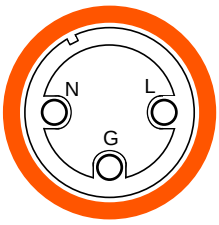
P+N+G (PDL P/N 56P332) Australia/New Zealand connector

Note that this is not the same cord as the 40K9617 cord. PDU line cord connector pin out is different.

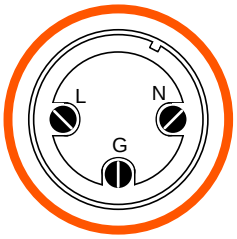
Used with:

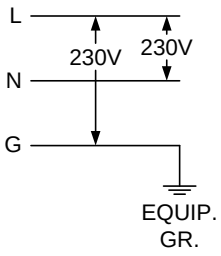
39Y8937 - Front End PDU

Female Sleeve



Male Pin





© IBM Corporation 2012

40K9611 - IBM DPI 32A Cord (IEC 309 3P+N+G)

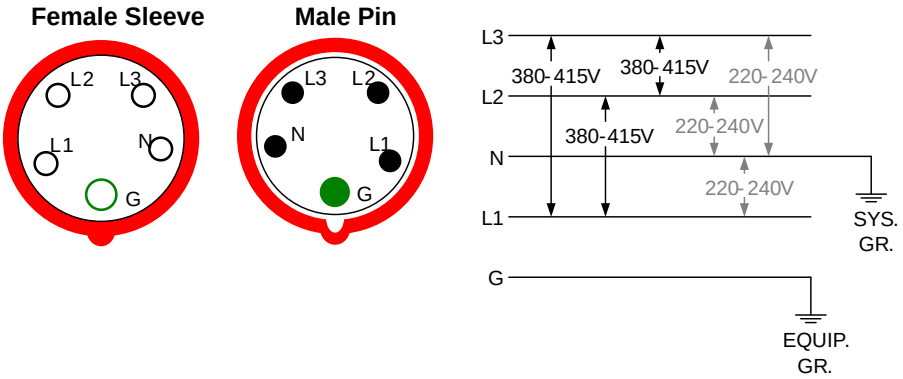
IEC-309 3P+N+G (4.3m) 32A, 3P5W plug (Type 532P6W)
32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

Only a receptacle or a connector is needed to mate with the plug on the PDU input line cord. See section "IEC 309 Pin & Sleeve Plug Decode" on page 60 in this document for further details on IEC309.

Matching receptacle listing 532R6W IP-67 HUBBELL, Hubbell receptacle P/N HBL532R6W
Matching connector listing 532C6W IP-67 HUBBELL, Hubbell connector P/N HBL532C6W

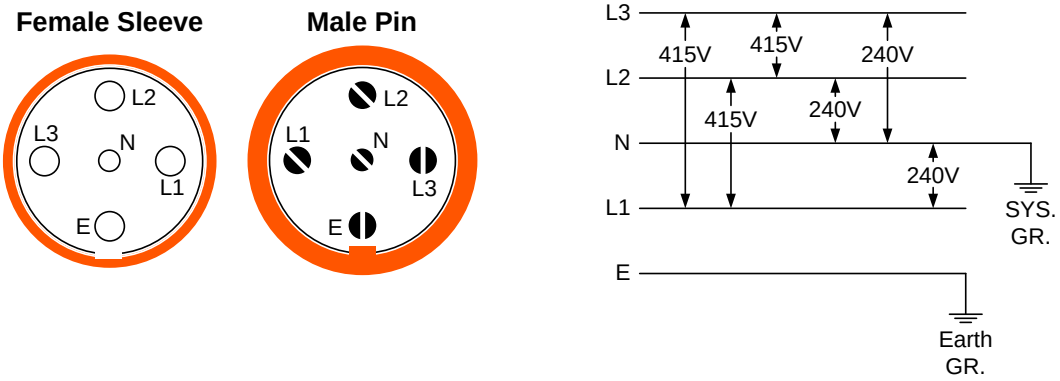
Used with:

46M4002 – 1U 9 C19 / 3 C13 Switched and Monitored
46M4004 – 1U 12 C13 Switched and Monitored
71762MX – DPI Ultra Density Enterprise PDU+
71762NX – DPI Ultra Density Enterprise PDU
39M2816 – DPI Enterprise PDU+ (C13)
39Y8941 – DPI Enterprise PDU (C13)
39Y8948 – DPI Enterprise PDU (C19)



Re-termination in Australia/New Zealand

The IEC-309 3P+N+G may need to be replaced in AUS/NZ with Clipsal P/N 56PA532 (5 Wire, Three Phase Wye) plug.



© IBM Corporation 2012

40K9612 - IBM DPI 32A Cord (IEC 309 P+N+G)

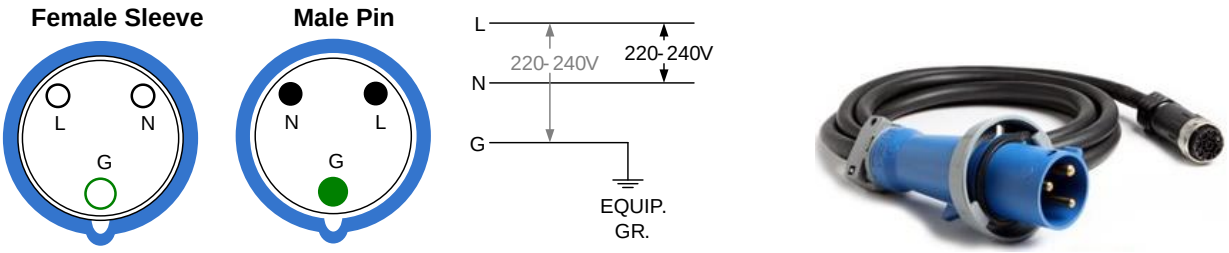
IEC 309 P+N+G (4.3m) - 32A / 220-240VAC Single Phase

Only a receptacle or a connector is needed to mate with the plug on the PDU input line cord. See section "IEC 309 Pin & Sleeve Plug Decode" on page 60 in this document for further details on IEC309.

Matching receptacle listing 332R6W IP-67 HUBBELL, Hubbell receptacle P/N HBL332R6W
Matching connector listing 332C6W IP-67 HUBBELL, Hubbell connector P/N HBL332C6W

Used with:

46M4002 – 1U 9 C19 / 3 C13 Switched and Monitored
46M4004 – 1U 12 C13 Switched and Monitored
71762MX – DPI Ultra Density Enterprise PDU+
71762NX – DPI Ultra Density Enterprise PDU
39M2816 – DPI Enterprise PDU+ (C13)
39Y8941 – DPI Enterprise PDU (C13)
39Y8948 – DPI Enterprise PDU (C19)



40K9613 – IBM DPI 63A Cord (IEC 309 P+N+G)

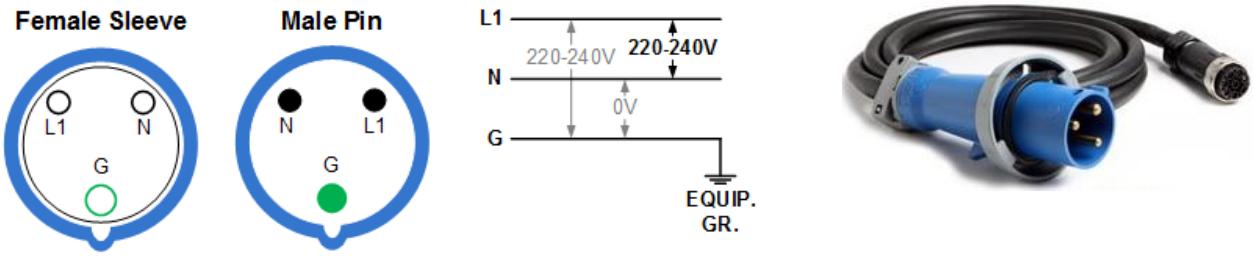
IEC 309 P+N+G (4.3m) - 63A / 220-240VAC Single Phase

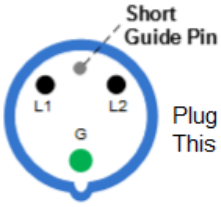
Only a receptacle or a connector is needed to mate with the plug on the PDU input line cord. See section "IEC 309 Pin & Sleeve Plug Decode" on page 60 in this document for further details on IEC309.

Matching receptacle listing 363R6W IP-67 HUBBELL, Hubbell receptacle P/N HBL363R6W
Matching connector listing 363C6W IP-67 HUBBELL, Hubbell connector P/N HBL363C6W

Used with:

46M4002 – 1U 9 C19 / 3 C13 Switched and Monitored
46M4004 – 1U 12 C13 Switched and Monitored
71762MX – DPI Ultra Density Enterprise PDU+
71762NX – DPI Ultra Density Enterprise PDU
39M2816 – DPI Enterprise PDU+ (C13)
39Y8941 – DPI Enterprise PDU (C13)
39Y8948 – DPI Enterprise PDU (C19)





Plug may have a short guide pin.
This still makes it a single phase plug.

© IBM Corporation 2012

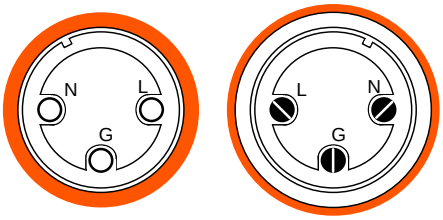
40K9617 – IBM DPI 32A Cord (AUS/NZ 3112 32A)

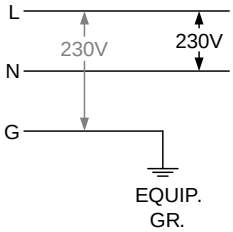
P+N+G (PDL P/N 56P332) Australia/New Zealand connector

Used with:

46M4002 – 1U 9 C19 / 3 C13 Switched and Monitored
46M4004 – 1U 12 C13 Switched and Monitored
71762MX – DPI Ultra Density Enterprise PDU+
71762NX – DPI Ultra Density Enterprise PDU
39M2816 – DPI Enterprise PDU+ (C13)
39Y8941 – DPI Enterprise PDU (C13)
39Y8948 – DPI Enterprise PDU (C19)

Female Sleeve **Male Pin**





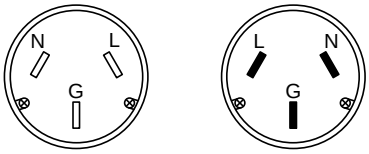
40K9618 – IBM DPI 30A Cord (KSC 8305 30A)

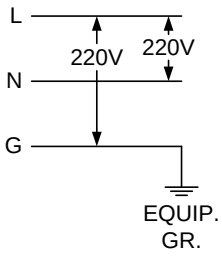
P+N+G (Shin Ju P/N SJ-P3302) Korea connector

Used with:

46M4002 – 1U 9 C19 / 3 C13 Switched and Monitored
46M4004 – 1U 12 C13 Switched and Monitored
71762MX – DPI Ultra Density Enterprise PDU+
71762NX – DPI Ultra Density Enterprise PDU
39M2816 – DPI Enterprise PDU+ (C13)
39Y8941 – DPI Enterprise PDU (C13)
39Y8948 – DPI Enterprise PDU (C19)

Female End **Male End**





© IBM Corporation 2012

Attached 16A 3ph Cord (IEC309 3P+N+G)

IEC-309 3P+N+G 3.0 meter 16A, 3P5W plug (Type 516P6W)
32A (32A / Phase) 380-415VAC Three Phase Wye
48A Total Circuit Capacity

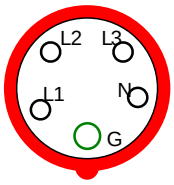
Only a receptacle or a connector is needed to mate with the plug on the PDU input line cord. See section "IEC 309 Pin & Sleeve Plug Decode" on page 60 in this document for further details on IEC309.

Matching receptacle listing 516R6W IP-67 HUBBELL, Hubbell receptacle P/N HBL516R6W
Matching connector listing 516C6W IP-67 HUBBELL, Hubbell connector P/N HBL516C6W

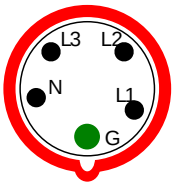
Used with:

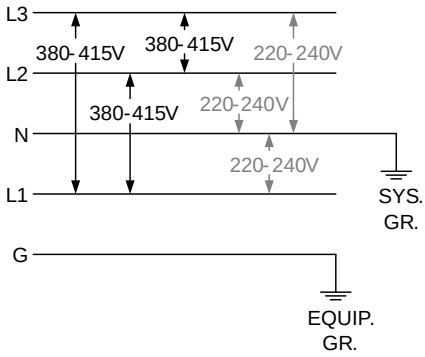
46M4122 – 0U 24 C13 PDU

Female Sleeve



Male Pin





Attached 32A 1ph Cord (IEC309 P+N+G)

IEC 309 P+N+G 3.0 meter (4.3m) - 32A / 220-240VAC Single Phase

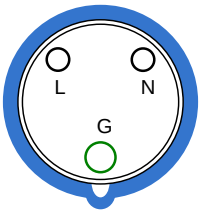
Only a receptacle or a connector is needed to mate with the plug on the PDU input line cord. See section "IEC 309 Pin & Sleeve Plug Decode" on page 60 in this document for further details on IEC309.

Matching receptacle listing 332R6W IP-67 HUBBELL, Hubbell receptacle P/N HBL332R6W
Matching connector listing 332C6W IP-67 HUBBELL, Hubbell connector P/N HBL332C6W

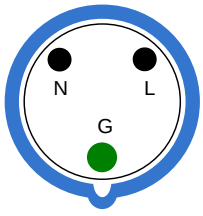
Used with:

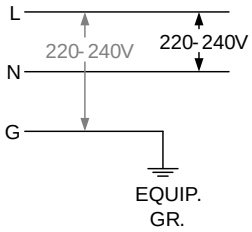
46M4131 – 0U 24 C13 Basic PDU 46M4119 – 0U 24 C13U Switched and Monitored

Female Sleeve



Male Pin





© IBM Corporation 2012

Attached 32A 3ph Cord (IEC309 3P+N+G)

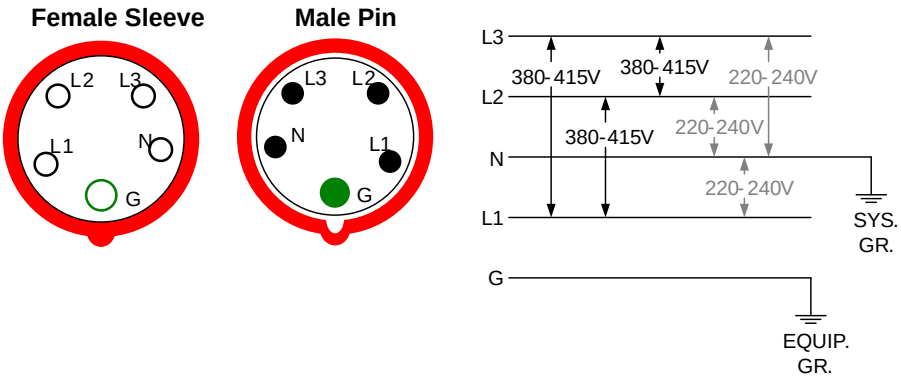
IEC-309 3P+N+G 3.0 meter 32A, 3P5W plug (Type 532P6W)
32A (32A / Phase) 380-415VAC Three Phase Wye
96A Total Circuit Capacity

Only a receptacle or a connector is needed to mate with the plug on the PDU input line cord. See section "IEC 309 Pin & Sleeve Plug Decode" on page 60 in this document for further details on IEC309.

Matching receptacle listing 532R6W IP-67 HUBBELL, Hubbell receptacle P/N HBL532R6W
Matching connector listing 532C6W IP-67 HUBBELL, Hubbell connector P/N HBL532C6W

Used with:

46M4143 – 0U 12 C19/12 C13 Basic PDU 46M4137 – 0U 12 C19/12 C13 Switched and Monitored



Attached 90A DC line cord (Hardwired)

90A@240-380VDC cable is 4.3 meter with a pig-tail termination (i.e. no plug). It has three stranded copper conductors, each with a cross section of 25 sq. mm.

The PDU conductors are connected to a high-voltage dc power source as described in the table. All connections must be performed by a licensed electrician, following local electrical codes or requirements.

Wire color	Function
Green-yellow	Earth ground
Blue	Negative DC Voltage
Brown	Positive DC Voltage

Used with:

44T0966 – 1U Higher Voltage DC PDU

© IBM Corporation 2012

PDU Mount Options

This section provides brief information on mounting options for the PDUs covered in this guide. For more detailed information on mounting options, refer to the PDU in questions installation manual. See IBM PDU Installation Manuals section on page 62 for links to IBM PDU installation manuals.

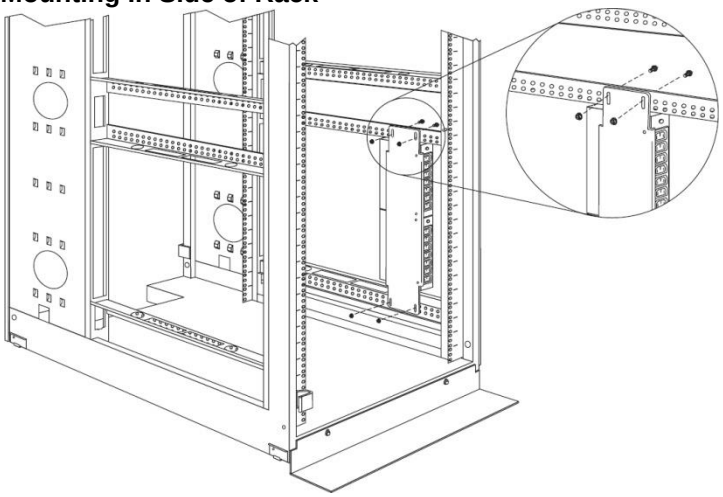
Universal PDU Mount Options

Hardware is included for both EIA (U space) mounting and side pocket mounting.

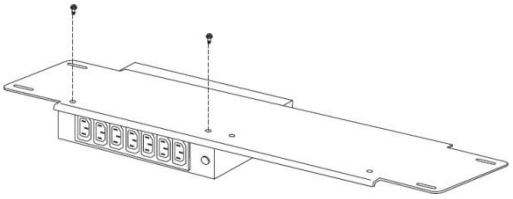
Supported:

39Y8952 – Universal Rack PDU
39Y8953 – Universal Rack PDU
39Y8954 – Universal Rack PDU
39Y8955 – Universal Rack PDU
39Y8956 – Universal Rack PDU
39Y8957 – Universal Rack PDU
39Y8958 – Universal Rack PDU
39Y8959 – Universal Rack PDU
39Y8960 – Universal Rack PDU
39Y8961 – Universal Rack PDU
39Y8962 – Universal Rack PDU

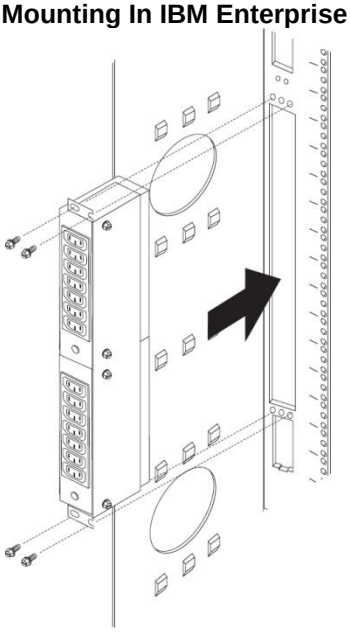
Mounting In Side of Rack



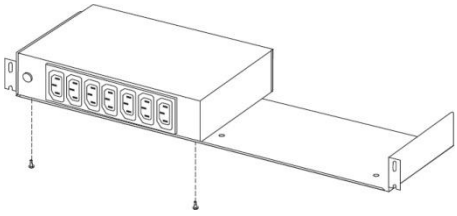
The small vertical mounting plate, which ships with the IBM Universal Rack PDU, will need to be used for this installation option.



Mounting In IBM Enterprise Rack (9308 & 1410) & IBM Enterprise V2 Rack (9363) Rear Zero Pocket



The horizontal mounting bracket, which ships with the IBM Universal Rack PDU, will need to be used for this installation option.

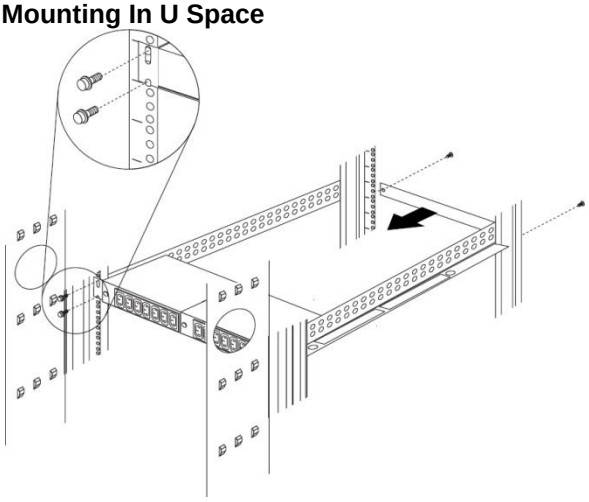


© IBM Corporation 2012

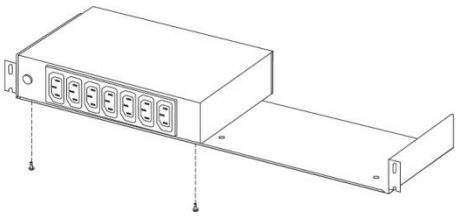
Supported:

39Y8952 – Universal Rack PDU
39Y8953 – Universal Rack PDU
39Y8954 – Universal Rack PDU
39Y8955 – Universal Rack PDU
39Y8956 – Universal Rack PDU
39Y8957 – Universal Rack PDU
39Y8958 – Universal Rack PDU
39Y8959 – Universal Rack PDU
39Y8960 – Universal Rack PDU
39Y8961 – Universal Rack PDU
39Y8962 – Universal Rack PDU

Mounting In U Space



The horizontal mounting bracket, which ships with the IBM Universal Rack PDU, will need to be used for this installation option.



© IBM Corporation 2012

Front End PDU Mount Options

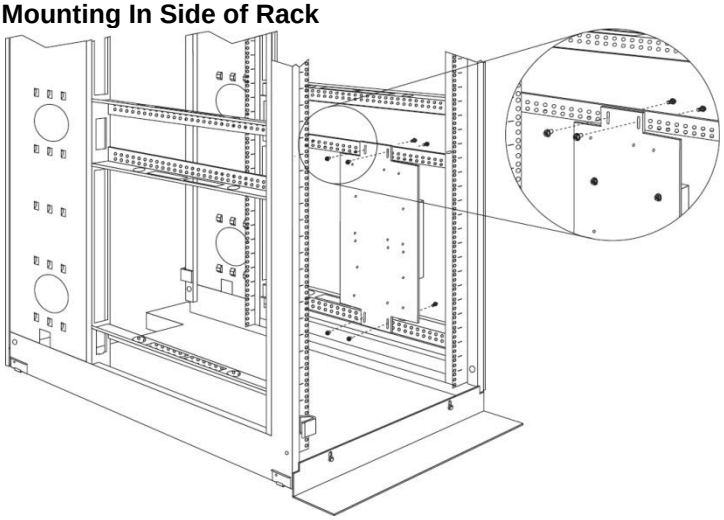
Units come with side wall mounting hardware only; however, Front End PDUs can be mounted in the EIA (U) space using the rack PDU hardware. Front End PDUs only support reconfigured shipment in side panel. Hardware is included for both EIA mounting and side of rack mounting.

You must remove any horizontally-mounted Front End PDUs from the EIA mounting space before you relocate your rack cabinet. Horizontal installation of Front End PDUs is not supported during relocation or shipping of a rack cabinet.

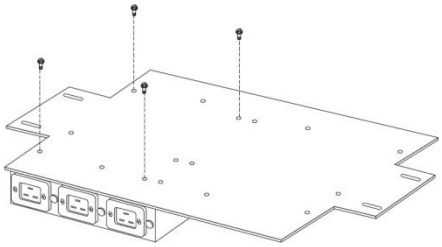
Supported with:

39Y8934 – Front End PDU
39Y8935 – Front End PDU
39Y8936 – Front End PDU
39Y8937 – Front End PDU

Mounting In Side of Rack



The large vertical-mounting plate, which ships with the IBM Front End PDU, will need to be used for this installation option.

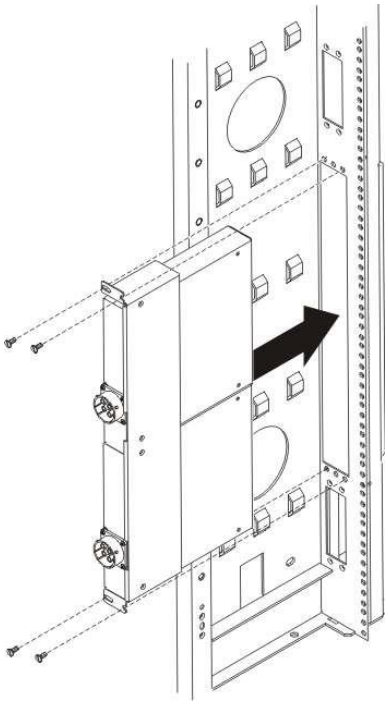


© IBM Corporation 2012

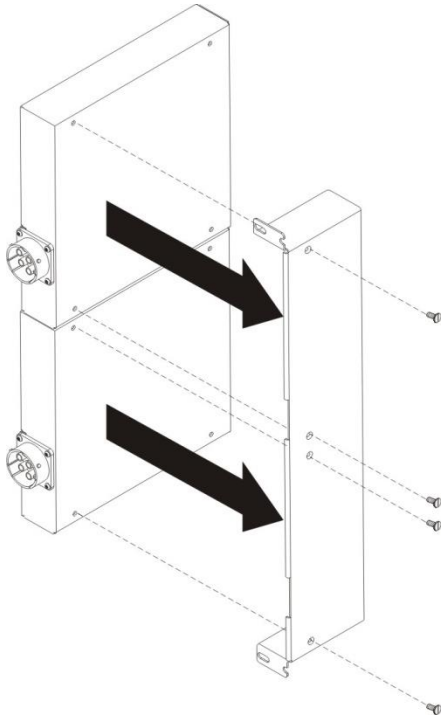
Supported with:

39Y8934 – Front End PDU
39Y8935 – Front End PDU
39Y8936 – Front End PDU
39Y8937 – Front End PDU

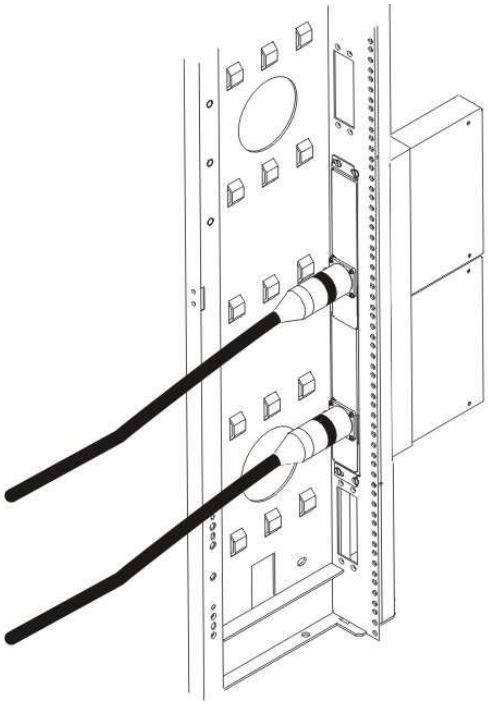
Mounting In IBM Enterprise Rack (9308 & 1410) & IBM Enterprise V2 Rack (9363) Rear Zero Pocket – Option 1



The horizontal-mounting bracket, which ships with the IBM Front End PDU, will need to be used for this installation option.



Line cord will be routed directly out the back of the rack.

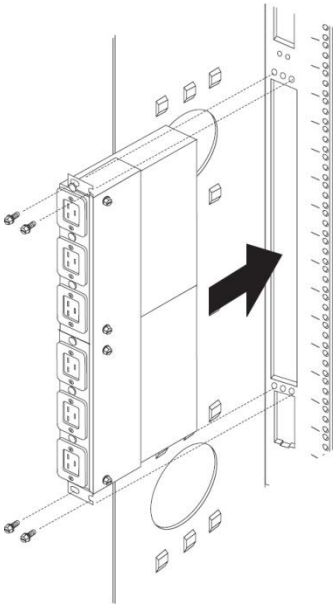


© IBM Corporation 2012

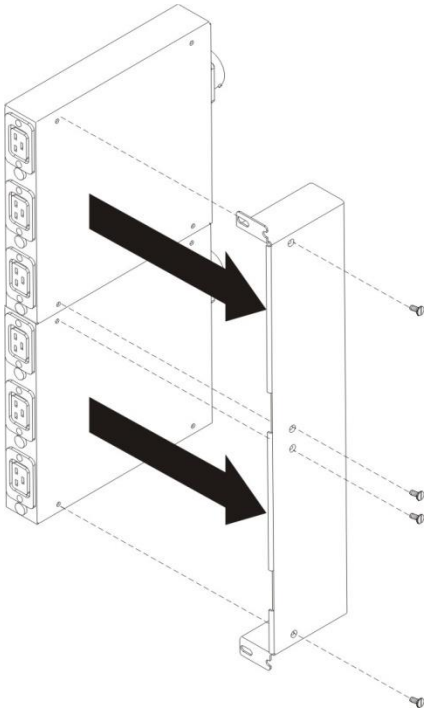
Supported with:

39Y8934 – Front End PDU
39Y8935 – Front End PDU
39Y8936 – Front End PDU
39Y8937 – Front End PDU

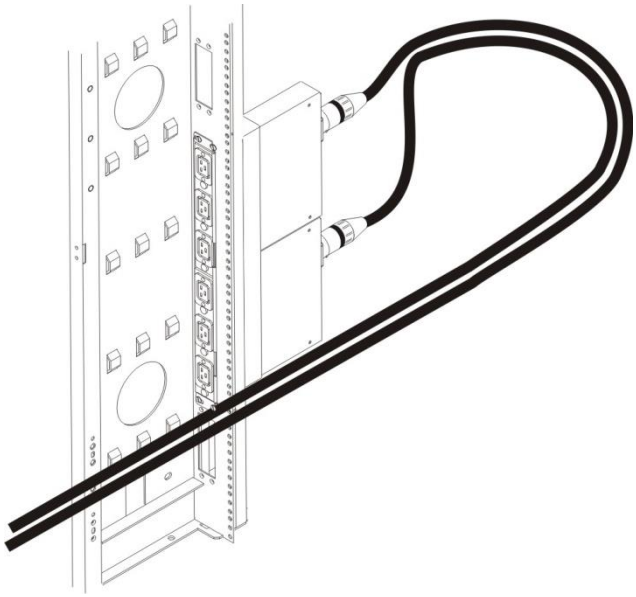
Mounting In IBM Enterprise Rack (9308 & 1410) & IBM Enterprise V2 Rack (9363) Rear Zero Pocket – Option 2



The horizontal-mounting bracket, which ships with the IBM Front End PDU, will need to be used for this installation option.



Line cord must be routed through rack U space when the IBM Front End PDU in mounted in the manor.

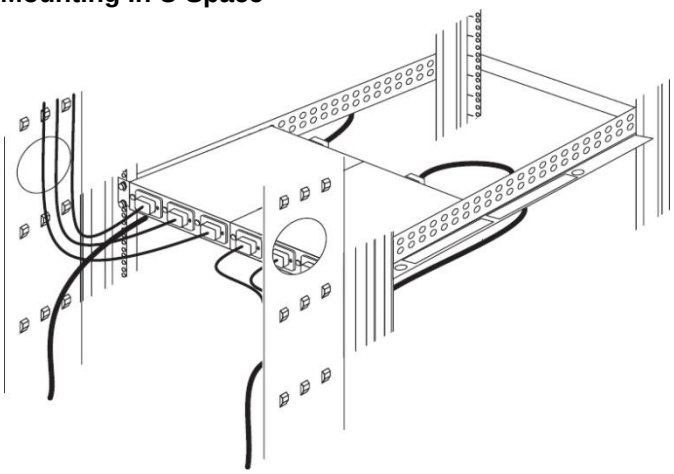


© IBM Corporation 2012

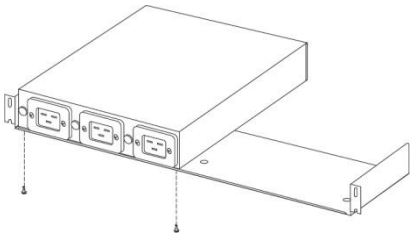
Supported with:

39Y8934 – Front End PDU
39Y8935 – Front End PDU
39Y8936 – Front End PDU
39Y8937 – Front End PDU

Mounting In U Space



The horizontal-mounting bracket, which ships with the IBM Front End PDU, will need to be used for this installation option.



© IBM Corporation 2012

Enterprise Shallow PDU Mount Options

Hardware is included for EIA (U space) mounting, side of rack, and side pocket mounting. Only sided of rack and side pocket mounting installation is approved for reconfigured shipment in an IBM rack.

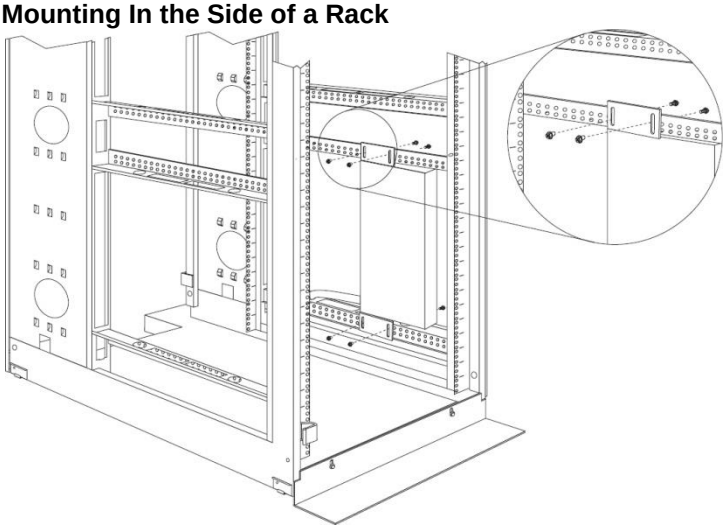
Horizontal installation of a PDU is not supported during relocation or shipping of a rack cabinet. You must remove any horizontally mounted PDUs from the EIA mounting space before you relocate the rack cabinet.

Supported with:

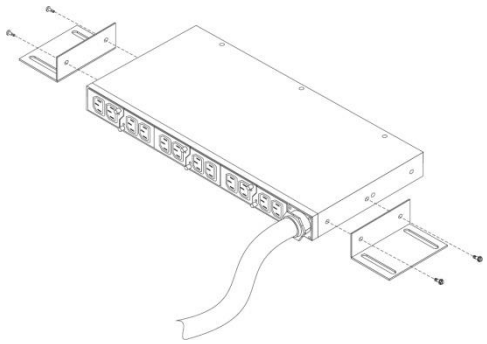
39Y8941 – DPI Enterprise PDU (C13)

39Y8948 – Enterprise PDU (C19)

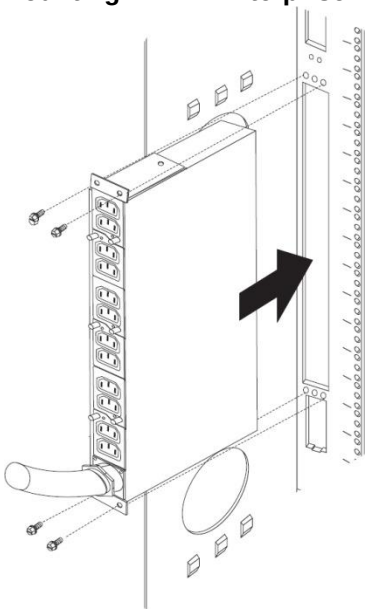
Mounting In the Side of a Rack



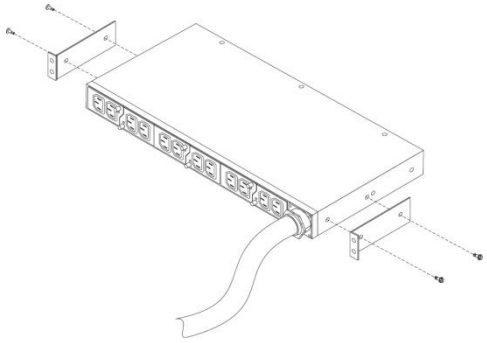
The vertical mounting brackets, which ships with the IBM Enterprise PDUs, will need to be used for this installation option.



Mounting In IBM Enterprise Rack (9308 & 1410) & IBM Enterprise V2 Rack (9363) Rear Zero Pocket



The horizontal mounting brackets, which ships with the IBM Enterprise PDUs, will need to be used for this installation option.



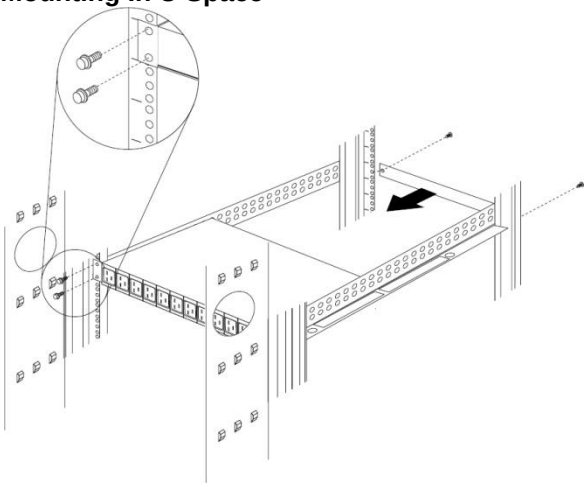
© IBM Corporation 2012

Supported with:

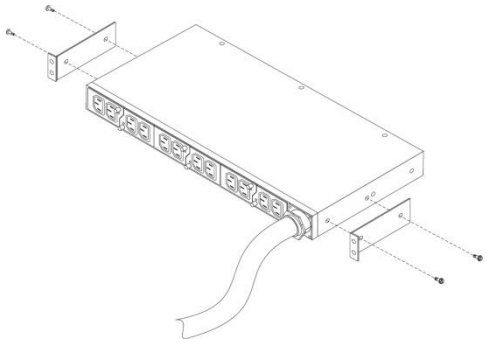
39Y8941 – DPI Enterprise PDU (C13)

39Y8948 – Enterprise PDU (C19)

Mounting In U Space



The horizontal mounting brackets, which ships with the IBM Enterprise PDUs, will need to be used for this installation option.



© IBM Corporation 2012

Enterprise Deep PDU Mount Options

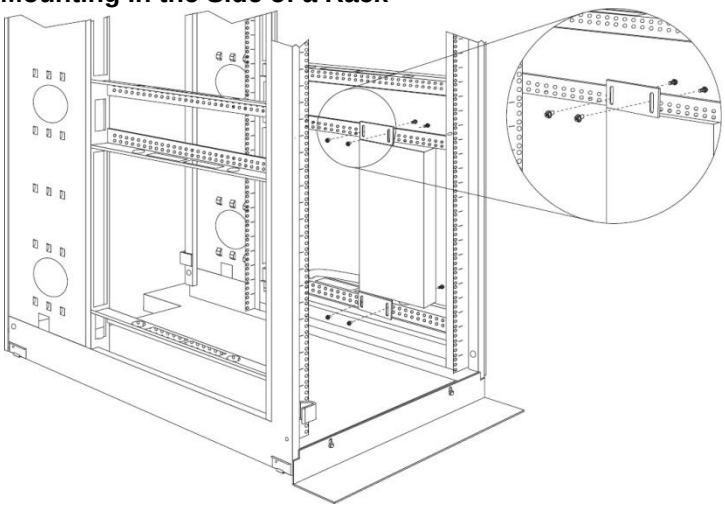
Hardware is included for EIA mounting (U space), side of rack, and side pocket mounting; only sided of rack and side pocket mounting installation is approved for reconfigured shipment in an IBM rack.

Horizontal installation of a PDU is not supported during relocation or shipping of a rack cabinet. You must remove any horizontally mounted PDUs from the EIA mounting space before you relocate the rack cabinet.

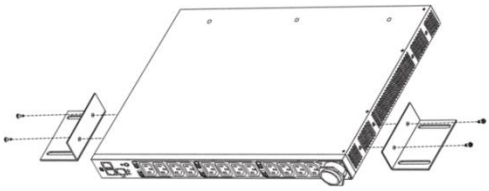
Supported with:

39M2816 – DPI Enterprise PDU+ (C13)
71762MX – Ultra Density Enterprise PDU+
71762NX – Ultra Density Enterprise PDU
44T0966 – 1U Higher Voltage DC PDU

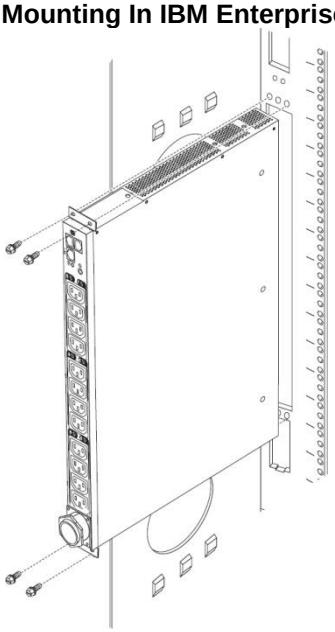
Mounting In the Side of a Rack



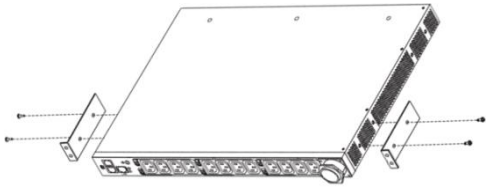
The vertical mounting plates, which ships with the IBM Switched PDUs, will need to be used for this installation option.



Mounting In IBM Enterprise Rack (9308 & 1410) & IBM Enterprise V2 Rack (9363) Rear Zero Pocket



The horizontal mounting bracket, which ships with the IBM Switched PDUs, will need to be used for this installation option.

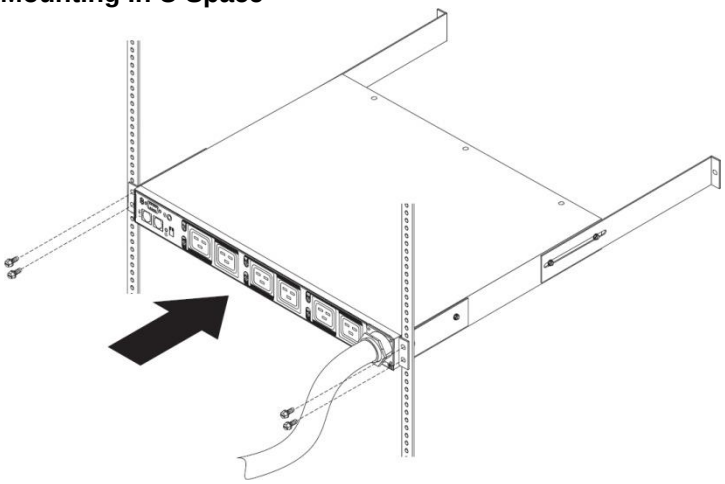


© IBM Corporation 2012

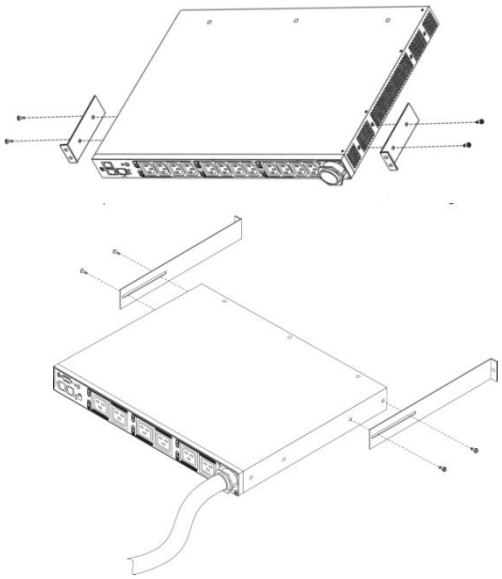
Supported with:

39M2816 – DPI Enterprise PDU+ (C13)
71762MX – Ultra Density Enterprise PDU+
71762NX – Ultra Density Enterprise PDU

Mounting In U Space



The horizontal mounting brackets, which ships with the IBM Switched PDUs, will need to be used for this installation option.



© IBM Corporation 2012

Switched PDU Mount Options

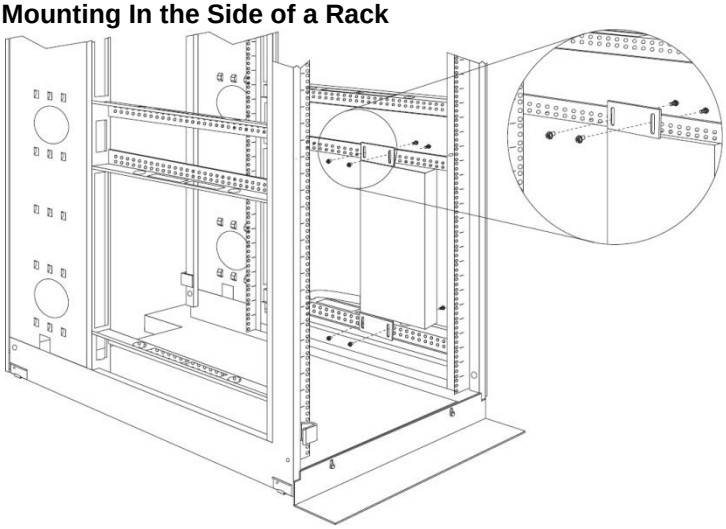
Hardware is included for EIA mounting (U space), side of rack, and side pocket mounting; only sided of rack and side pocket mounting installation is approved for reconfigured shipment in an IBM rack.

Horizontal installation of a PDU is not supported during relocation or shipping of a rack cabinet. You must remove any horizontally mounted PDUs from the EIA mounting space before you relocate the rack cabinet.

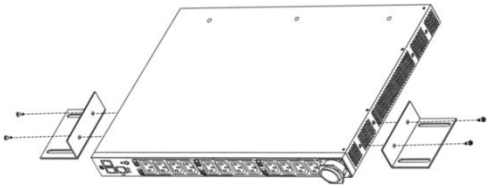
Supported with:

46M4002 – 1U 9 C19 / 3 C13 Switched and Monitored 46M4004 – 1U 12 C13 Switched and Monitored

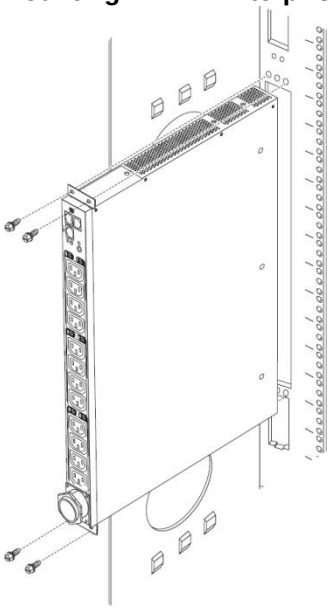
Mounting In the Side of a Rack



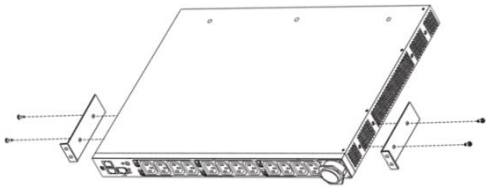
The vertical mounting plates, which ships with the IBM Switched PDUs, will need to be used for this installation option.



Mounting In IBM Enterprise Rack (9308 & 1410) & IBM Enterprise V2 Rack (9363) Rear Zero Pocket



The horizontal mounting bracket, which ships with the IBM Switched PDUs, will need to be used for this installation option.

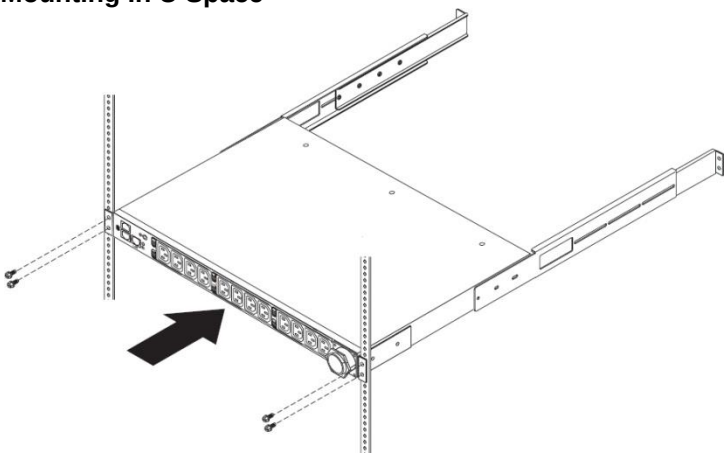


© IBM Corporation 2012

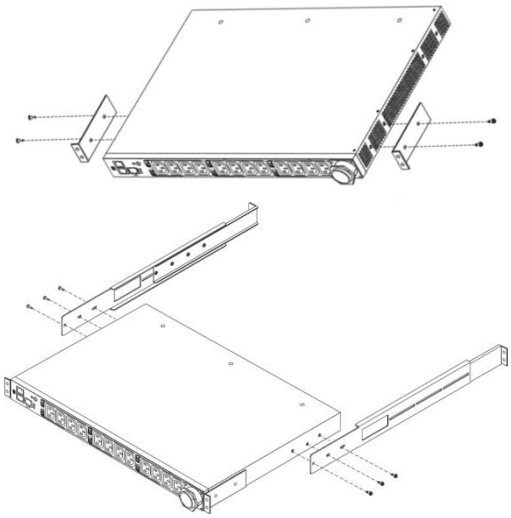
Supported with:

46M4002 – 1U 9 C19 / 3 C13 Switched and Monitored 46M4004 – 1U 12 C13 Switched and Monitored

Mounting In U Space



The horizontal mounting brackets, which ships with the IBM Switched PDUs, will need to be used for this installation option.



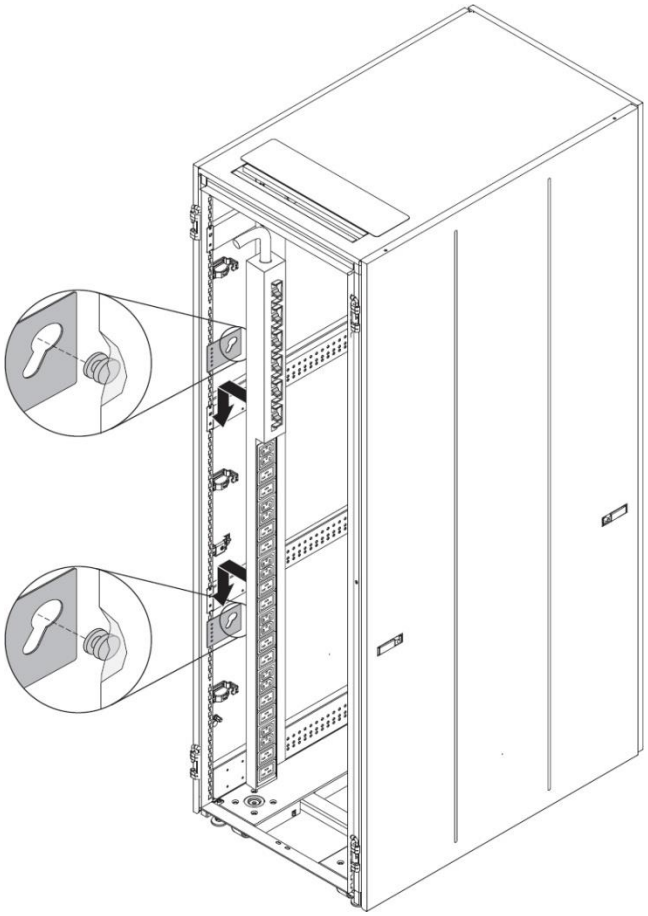
© IBM Corporation 2012

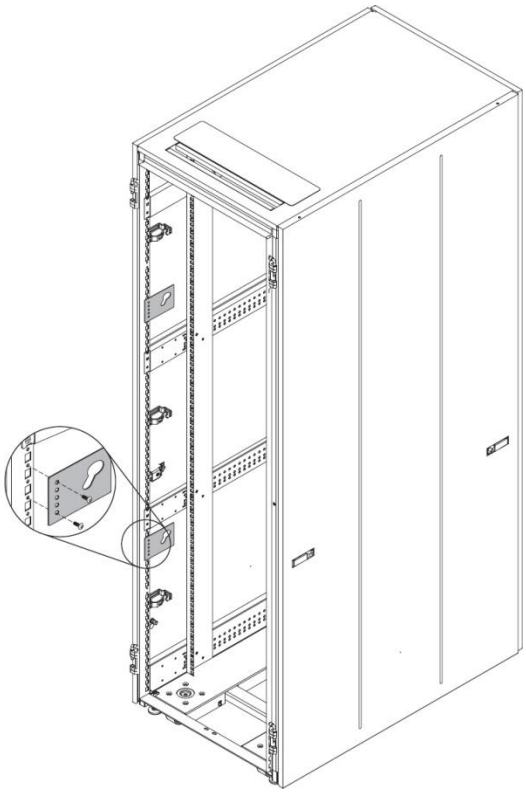
Zero U PDU Mount Options

Supported with:

46M4119 – 0U 24 C13U Switched and Monitored
46M4122 – 0U 24 C13 Basic PDU
46M4131 – 0U 24 C13 Basic PDU
46M4137 – 0U 12 C19/12 C13 Switched and Monitored
46M4143 – 0U 12 C19/12 C13 Basic PDU

Mounting In the Back of a IBM 42U Standard Rack (9307 & 9956)



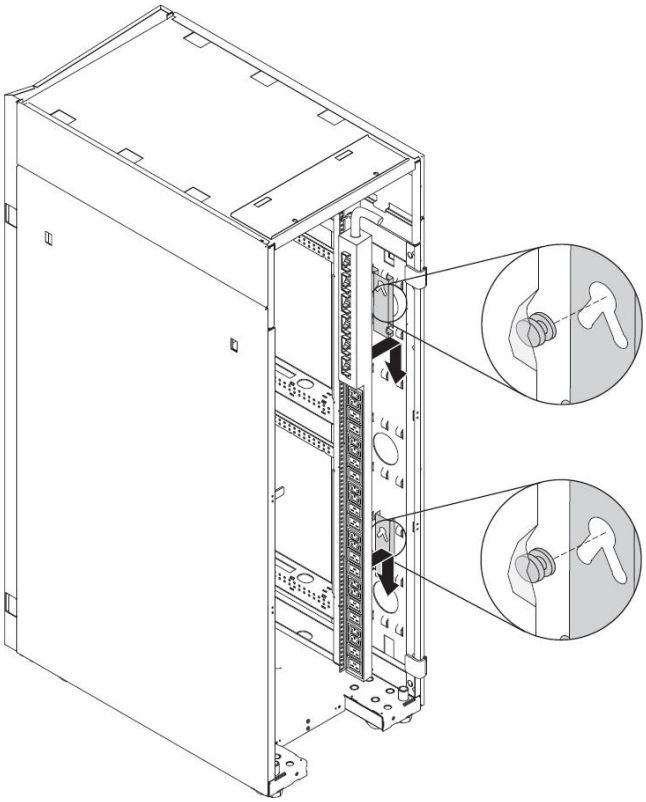


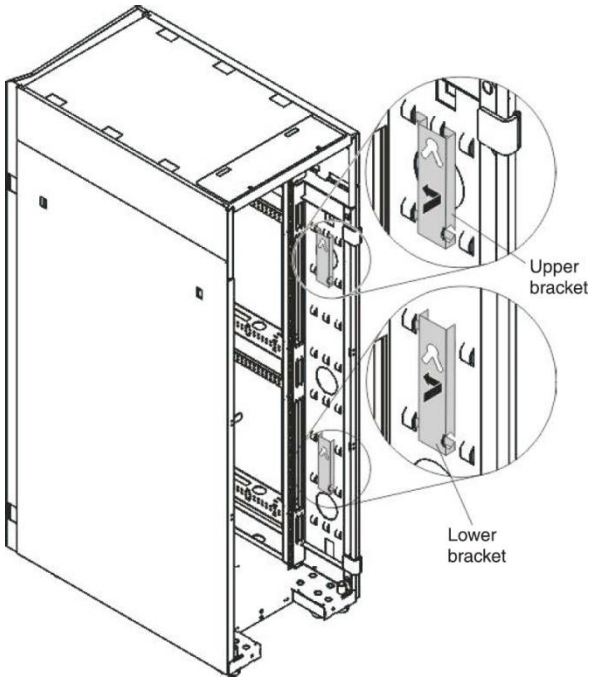
© IBM Corporation 2012

Supported with:

46M4119 – 0U 24 C13U Switched and Monitored
46M4122 – 0U 24 C13 Basic PDU
46M4131 – 0U 24 C13 Basic PDU
46M4137 – 0U 12 C19/12 C13 Switched and Monitored
46M4143 – 0U 12 C19/12 C13 Basic PDU

Mounting In IBM Enterprise Rack (9308 & 1410) & IBM Enterprise V2 Rack (9363) Rear



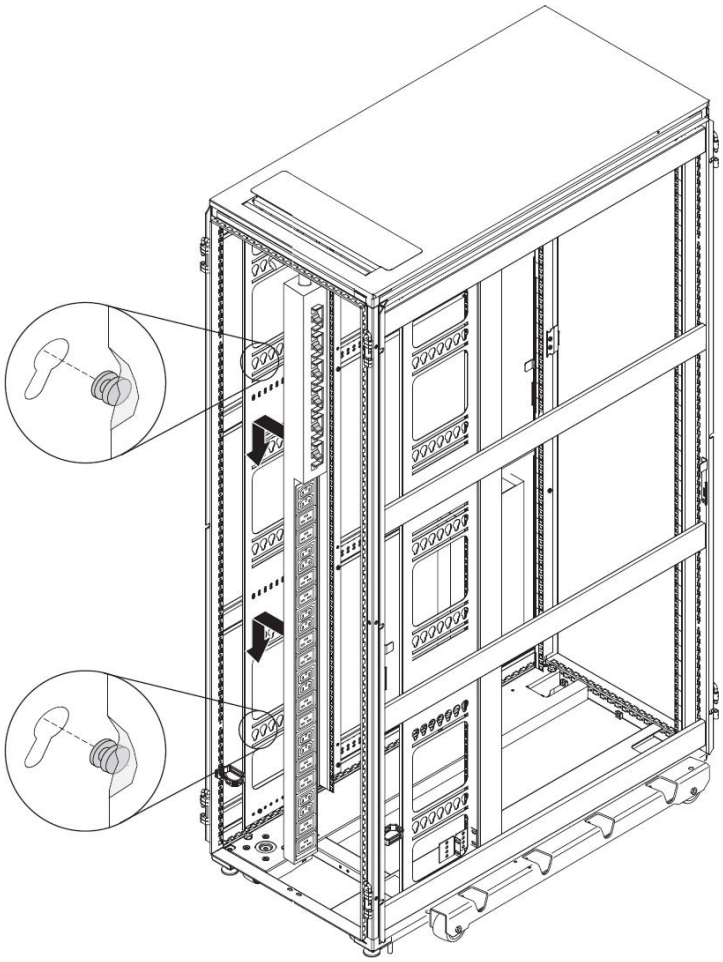


© IBM Corporation 2012

Supported with:

46M4119 – 0U 24 C13U Switched and Monitored
46M4122 – 0U 24 C13 Basic PDU
46M4131 – 0U 24 C13 Basic PDU
46M4137 – 0U 12 C19/12 C13 Switched and Monitored
46M4143 – 0U 12 C19/12 C13 Basic PDU

Mounting In the Back of IBM Racks With Integrated PDU Mounting Keyholes (9362, 9361, 9360)



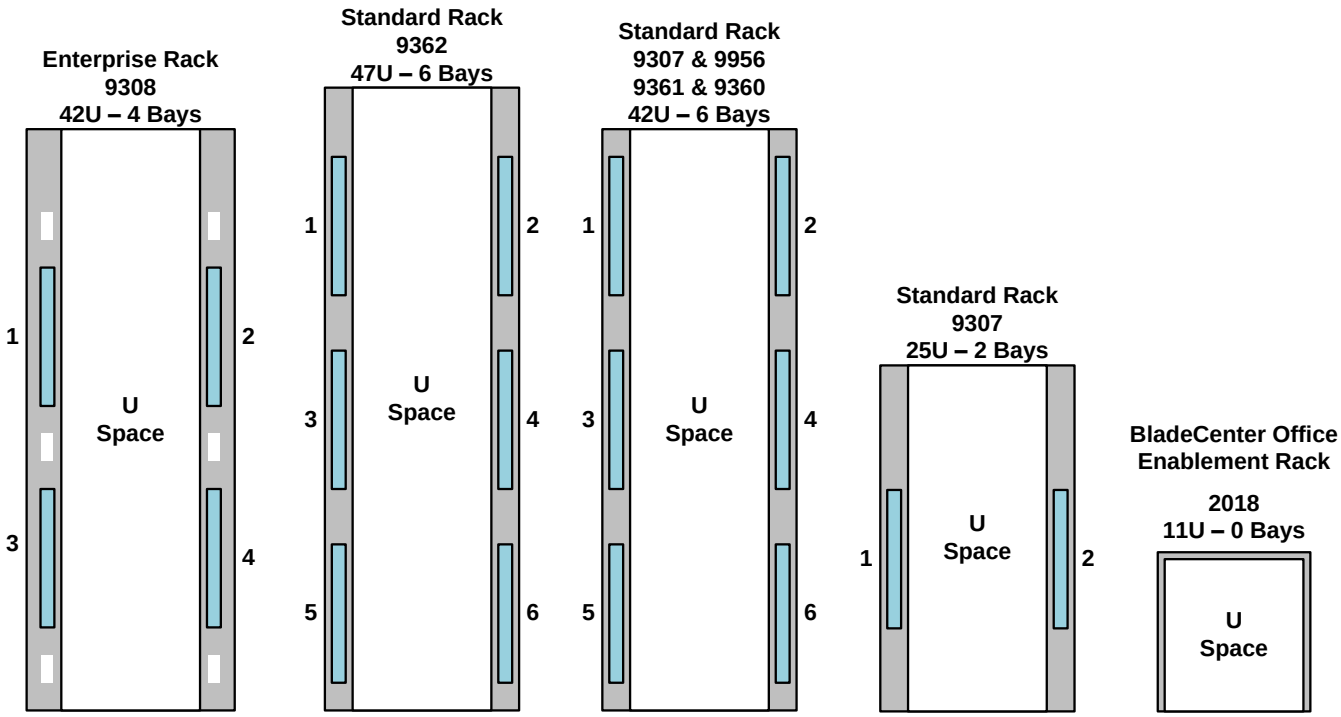
© IBM Corporation 2012

IBM System x Rack Types

IBM DPI PDUs are part of the IBM family of rack-based products. They are designed to easily install and work within IBM System x rack offerings. To gain a better understanding of the IBM System x rack family of products and the benefits they offer, please browse the IBM System x "Rack and Power Infrastructure Portfolio" Web site at http://www-03.ibm.com/systems/x/hardware/options/index.html.

IBM PDUs are designed to be mounted in any EIA-standard rack offering, but given the diversity of rack designs, many of the benefits for flexible mounting do not apply to non-IBM racks. For even more detailed information on the installation and maintenance of the IBM family of PDUs, consult the Web site listed in the above paragraph.

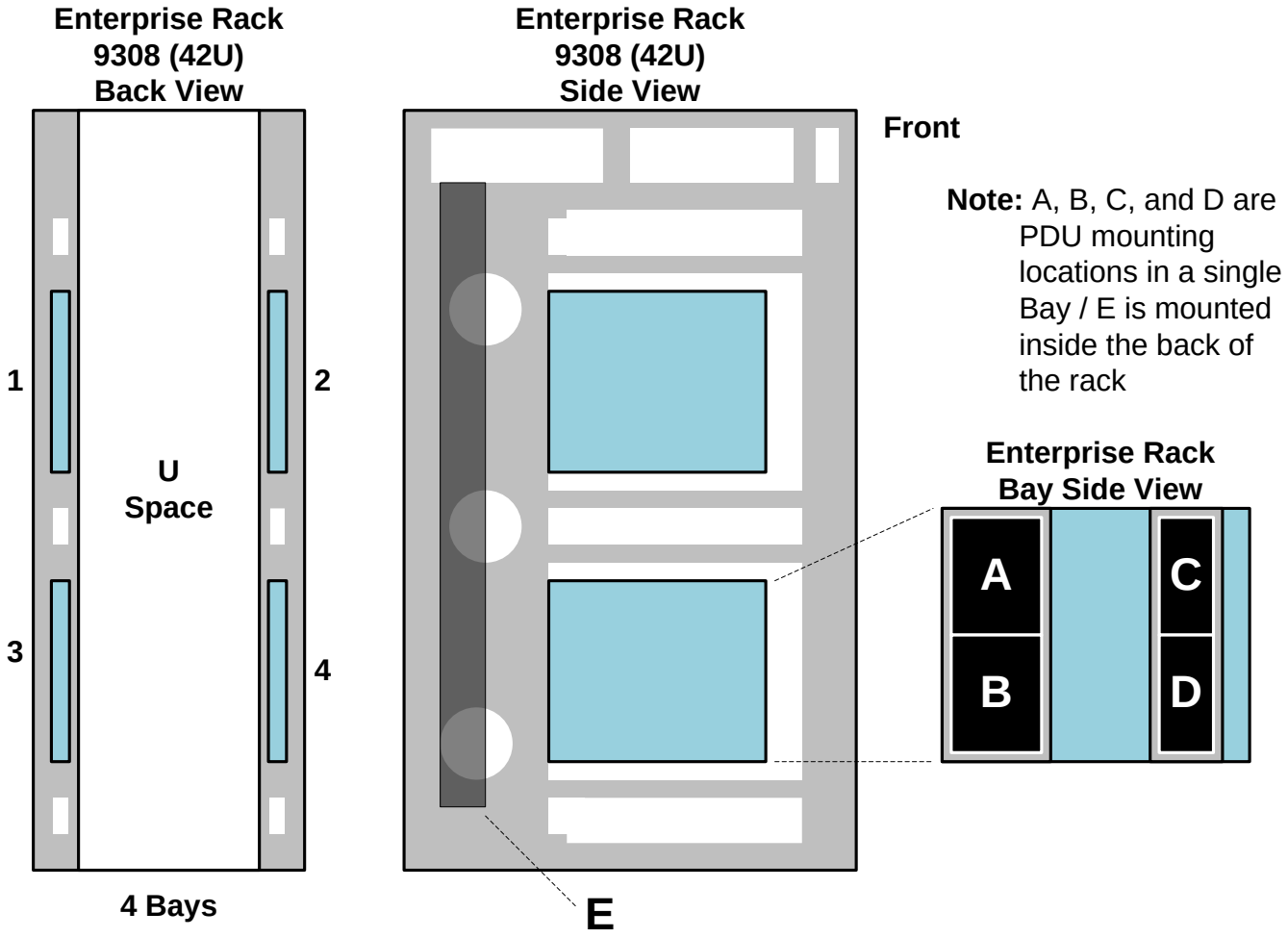
It is important to note that the BladeCenter Office Enablement Rack does not have side bays to mount PDUs. If a PDU is needed in the BladeCenter Office Enablement Rack, one the IBM PDUs in this guide can be mounted in the U Space in the rack.



© IBM Corporation 2012

IBM Enterprise Rack (42U) Installation Options

The IBM Enterprise Rack is the premier IBM rack, offering four deep side bays that enable the greatest variety of side bay mounting options. This flexibility is one of the major benefits of choosing this rack. Using all the available space in the side bays of this rack enables customers to install up to 84 outlets in this rack without sacrificing any valuable "U" space. The picture below details these side bays and provides a lettering and numbering guide to make explaining installation location easier. It is important to note that the Enterprise Rack bays do not accommodate two Enterprise or Ultra Density Enterprise PDUs in one bay due to lack of a clean way to route power cords from mounting location C and D.



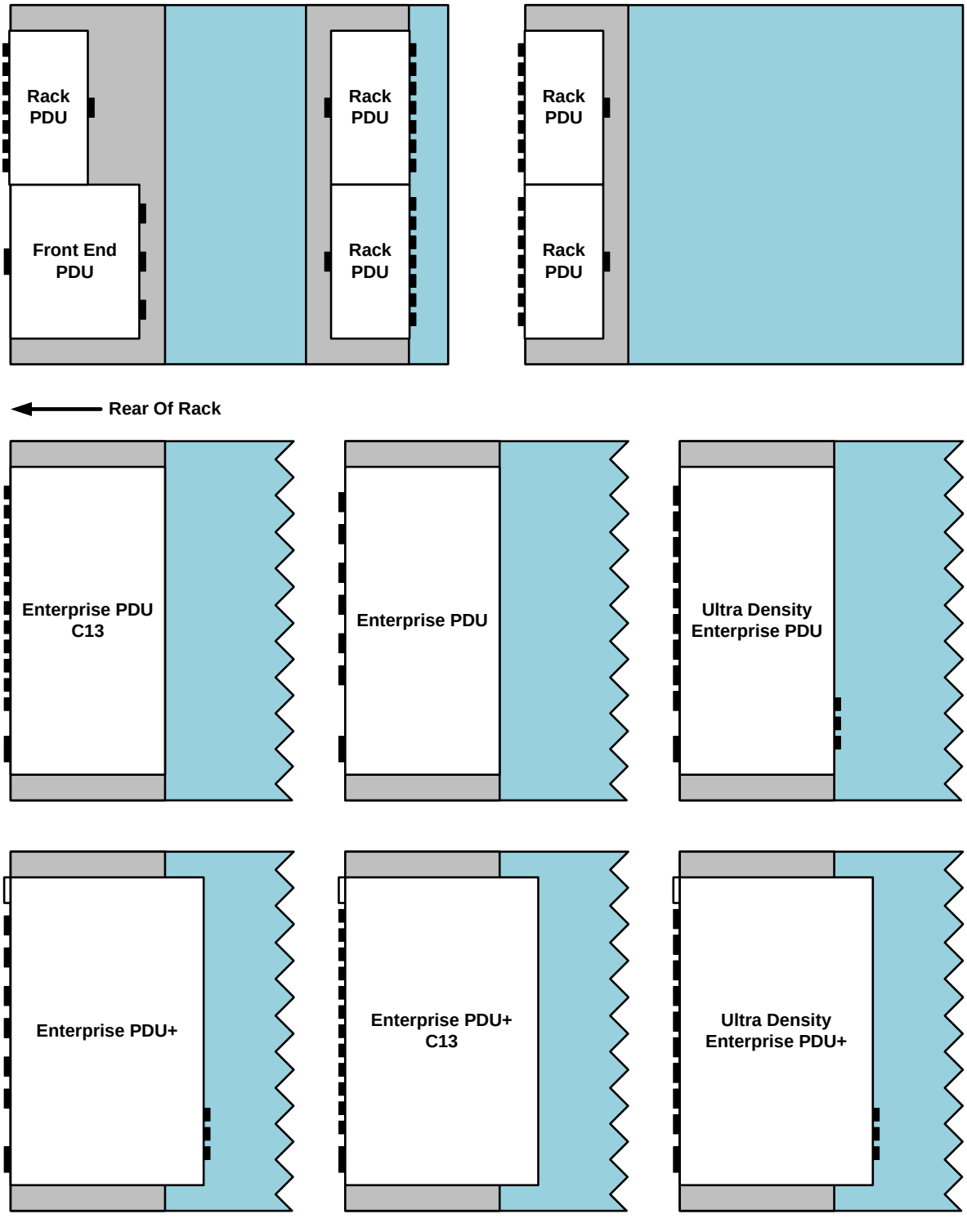
Enterprise Rack (42U) PDU Placement Rules

PDU	Placement Rules	Max # of PDUs
Universal Rack	A through D, Requires 1 Front End PDU to feed 3 Rack PDUs	12
Front End	A and B	8
"Enterprise", "1U 12 C13 Switched & Monitored", and "1U 9 C19 / 3 C13 Switched & Monitored"	One of These PDUs Requires A and B	4
Zero U	One of These PDUs Requires E	6

© IBM Corporation 2012

IBM Enterprise Rack Side Bays

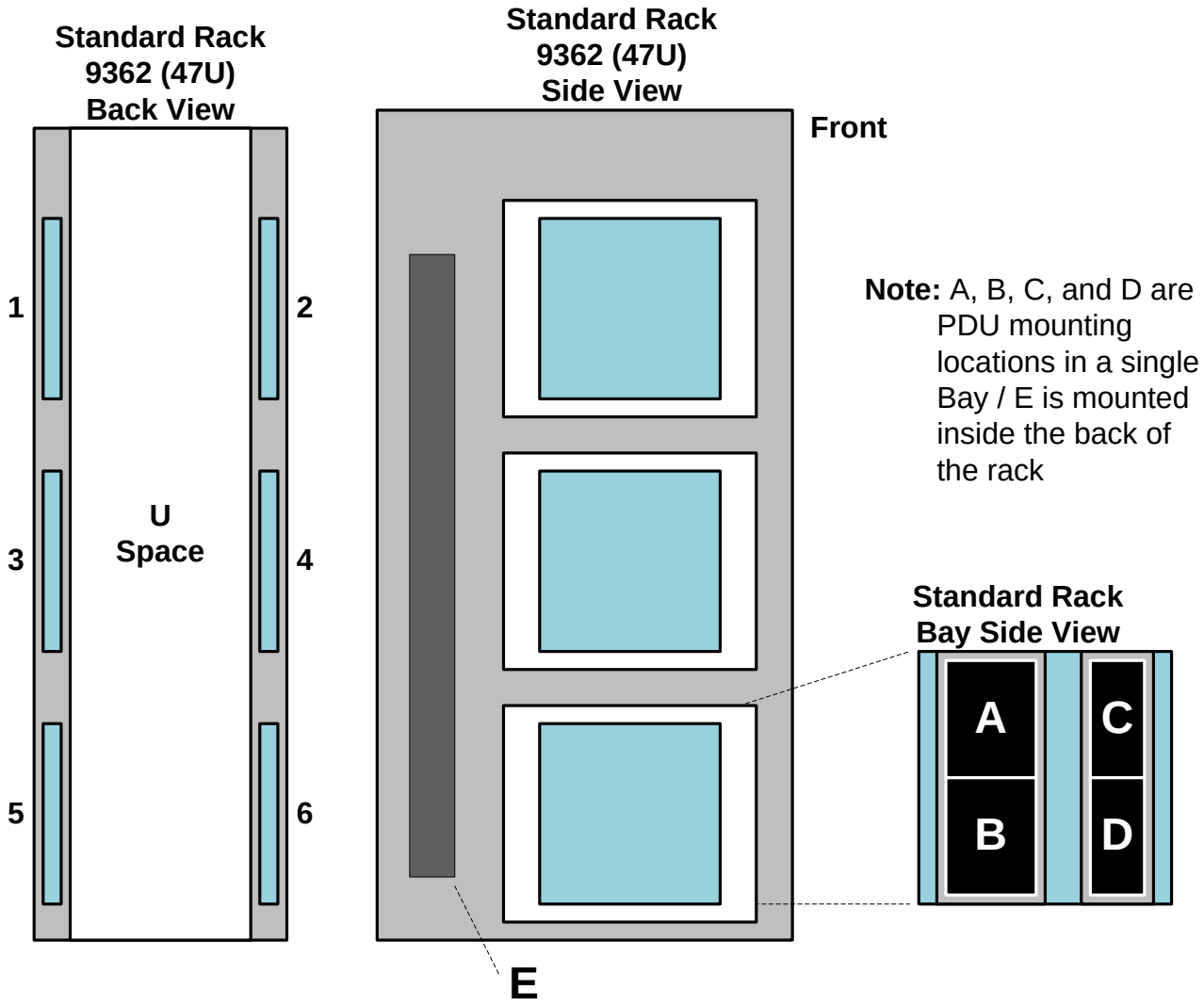
The depth of the IBM Enterprise Rack side bays allows the IBM System x PDUs to be nested side by side for large configurations PDUs. Here are a few examples of the supported PDU installations for the IBM Enterprise Rack. **Note:** Rack PDU in the following diagrams refers to the Universal Rack PDU.



© IBM Corporation 2012

Standard Rack (47U) Installation Options

This entry rack offers six side panel bay mounting locations. While it has more side bays than the Enterprise Rack, the Standard Rack's bays are less deep and do not allow the variety of mounting options of the Enterprise Rack. Even so, customers can install up to 56 outlets in the Standard Rack without sacrificing any "U" space. Here is graphical depiction of the side bays of the Standard Rack along with lettering and numbering guide. It is important to note that the Standard Rack bays are not deep enough to accommodate two Enterprise or Ultra Density Enterprise PDUs in one bay.



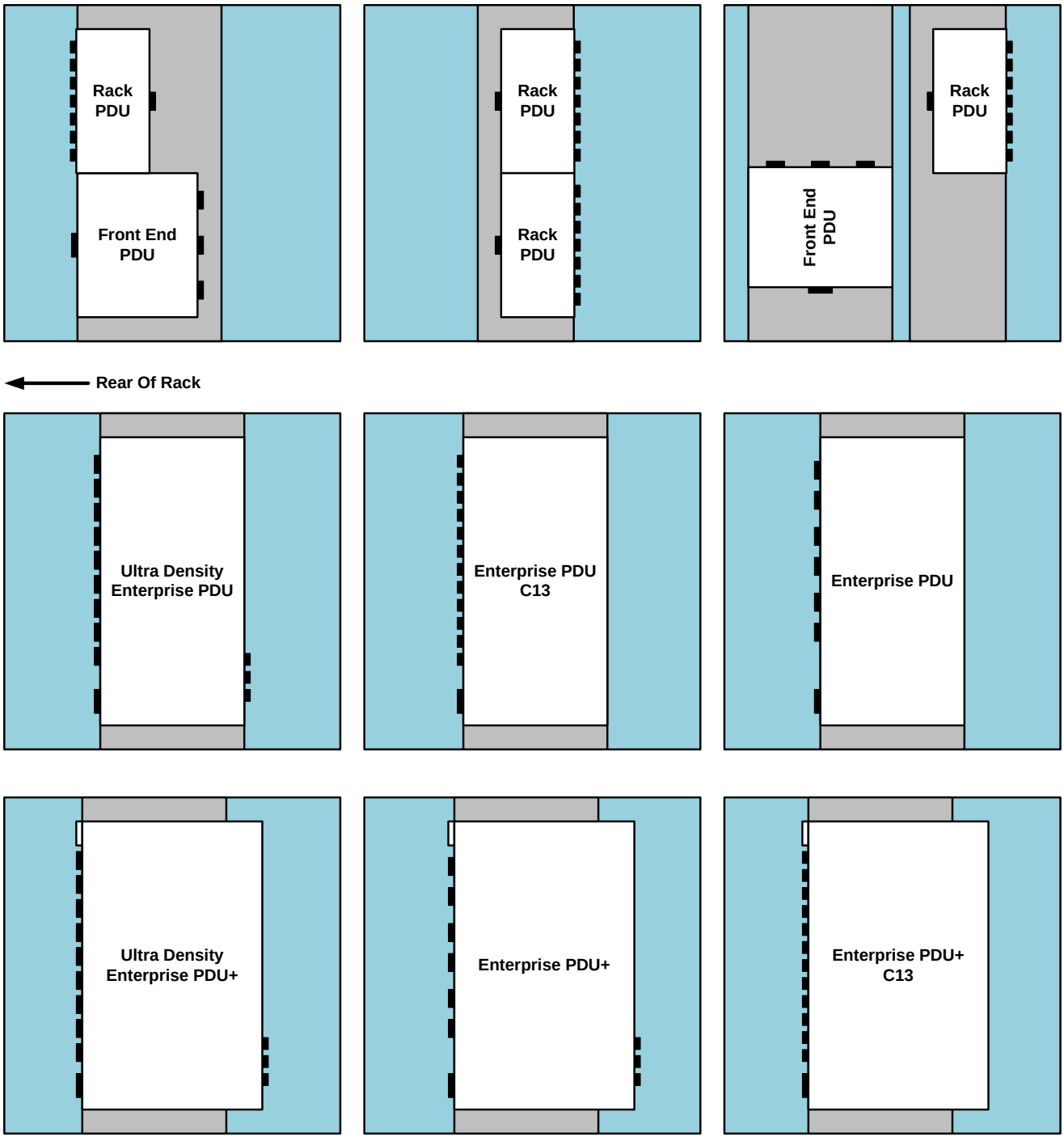
Standard Rack (42U) PDU Placement Rules

PDU	Placement Rules	Max # of PDUs
Universal Rack	A through D, Requires 1 Front End PDU to feed 3 Rack PDUs	8
Front End	A or B, Can't Be Used In Bays 1 and 2	4
"Enterprise", "1U 12 C13 Switched & Monitored", and "1U 9 C19 / 3 C13 Switched & Monitored"	One of These PDUs Requires A through D	4
Zero U in 9307 & 9956 Racks	One of These PDUs Requires E	2
Zero U in 9360 & 9361 Racks	One of These PDUs Requires E	6

© IBM Corporation 2012

IBM Standard Rack Side Bay

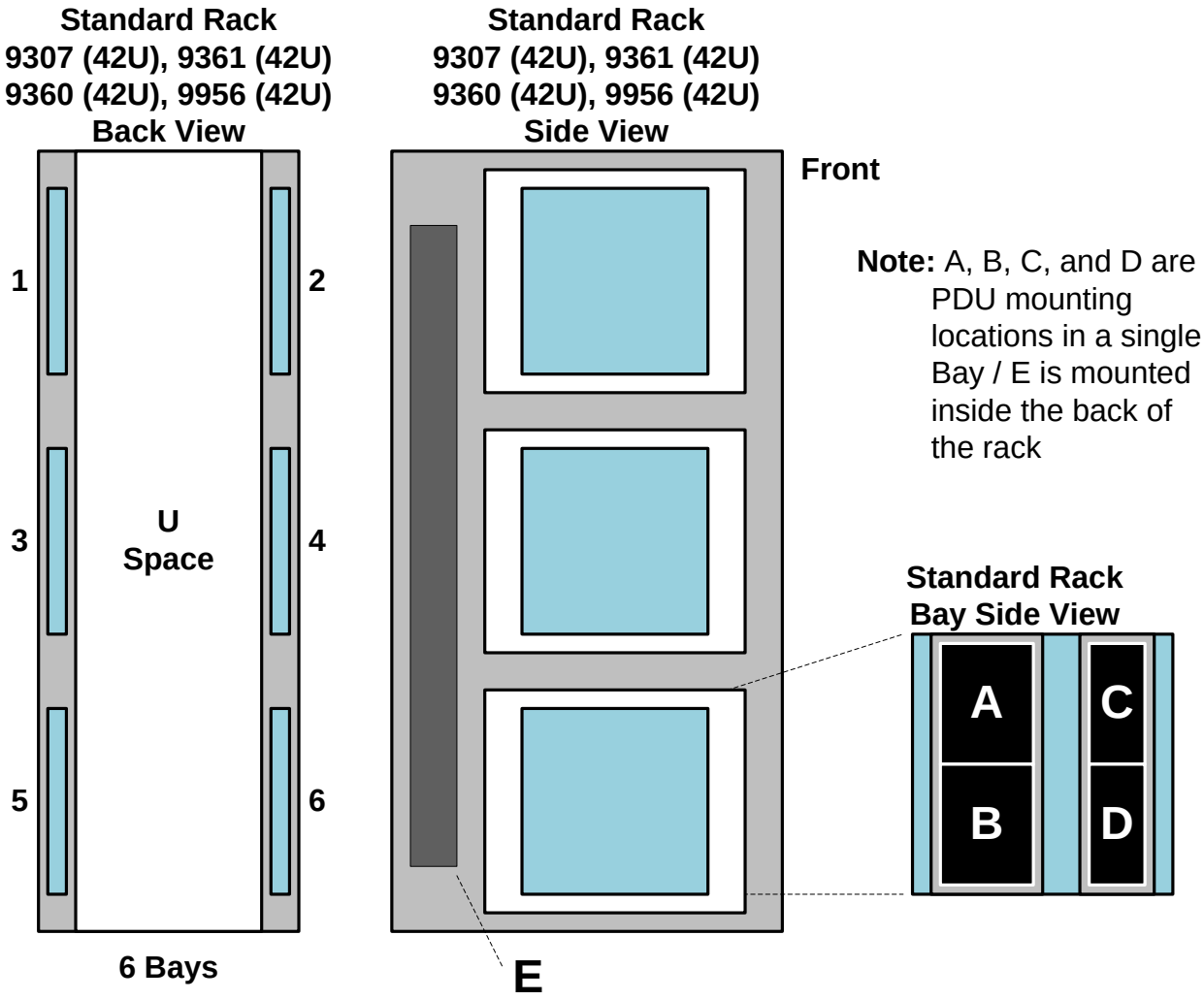
Here are some examples of the supported PDU mounting configurations in a single IBM Standard Rack side bay. **Note:** Rack PDU in the following diagrams refers to the Universal Rack PDU.



© IBM Corporation 2012

IBM Standard Rack (42U) Installation Options

This entry rack offers six side panel bay mounting locations. While it has more side bays than the Enterprise Rack, the Standard Rack's bays are less deep and do not allow the variety of mounting options of the Enterprise Rack. Even so, customers can install up to 56 outlets in the Standard Rack without sacrificing any "U" space. Here is graphical depiction of the side bays of the Standard Rack along with lettering and numbering guide. It is important to note that the Standard Rack bays are not deep enough to accommodate two Enterprise or Ultra Density Enterprise PDUs in one bay.



Standard Rack (42U) PDU Placement Rules

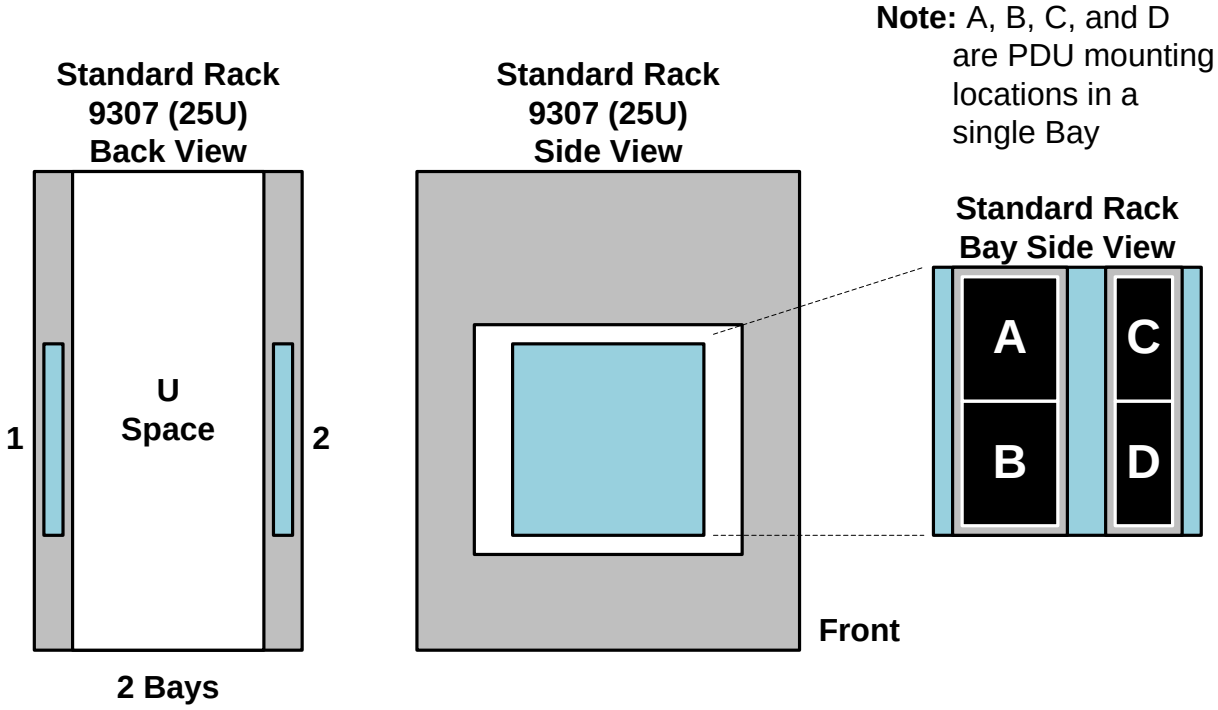
PDU	Placement Rules	Max # of PDUs
Universal Rack	A through D, Requires 1 Front End PDU to feed 3 Rack PDUs	8
Front End	A or B, Can't Be Used In Bays 1 and 2	4
"Enterprise", "1U 12 C13 Switched & Monitored", and "1U 9 C19 / 3 C13 Switched & Monitored"	One of These PDUs Requires A through D	4
Zero U	One of These PDUs Requires E	2

See "IBM Standard Rack Side Bay" section on page 52 for example PDU mounting configurations in a side bay.

© IBM Corporation 2012

IBM Standard Rack (25U) Installation Options

This entry rack offers two side panel bay mounting locations. Here is graphical depiction of the side bays of the Standard Rack along with a lettering and numbering guide. It is important to note that the Standard Rack bays are not deep enough to accommodate two Enterprise or Ultra Density Enterprise PDUs in one bay.



Standard Rack (25U) PDU Placement Rules

PDU	Placement Rules	Max # of PDUs
Universal Rack	A through D, Requires 1 Front End PDU to feed 3 Rack PDUs	4
Front End	A or B	2
“Enterprise”, “1U 12 C13 Switched & Monitored”, and “1U 9 C19 / 3 C13 Switched & Monitored”	One of These PDUs Requires A through D	2
Zero U	Not supported in 25U rack	0

See “IBM Standard Rack Side Bay” section on page 52 for example PDU mounting configurations in a side bay.

© IBM Corporation 2012

Reference Material

IBM Flex System Enterprise Chassis Label Rating

Chassis	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	100-127VAC Rating	200-240VAC Rating
Flex Enterprise	2500W	2	6	-	13.85A / Supply
Flex Enterprise	2100W	2	6	-	11.8A / Supply

See “IBM Flex System Enterprise Chassis Power Guide” for further details on IBM Flex System Power:
http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102111

IBM NeXtScale System Chassis Label Rating

Chassis	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	100-127VAC Rating	200-240VAC Rating
n1200	600W/900W *	2	6	10A / Supply	5A / Supply

** - 600W is at 100-127VAC and 900W is at 200-240V*

IBM BladeCenter Chassis Label Rating

Chassis	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	100-127VAC Rating	200-240VAC Rating
BC-E	2000W	2	4	-	12A / Supply
BC-E	2320W	2	4	-	13.8A / Supply
BC-H	2900W	2	4	-	37A / Connector **
BC-H	2980W	2	4	-	37A / Connector **
BC-HT	3160W	2	4	-	16A / Supply
BC-T	1300W	2	4	-	8A / Supply
BC-S	950W / 1450W ***	2	4	11.2A / Supply	8A / Supply

*** - 37A per power connector (16A, 16A, 5A) redundant, 24A per power connector non-redundant*
**** - 950W is at 100-127VAC and 1450W is at 200-240V*

For North America on BladeCenter power see “IBM BladeCenter Power Guide - North America & Japan” at:
http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101706

For International information on BladeCenter power see “IBM BladeCenter Power Guide - International” at:
http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102006

IBM System x Top of Rack Ethernet Switch Label Rating

Server	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	100-127VAC Rating / Server	200-240VAC Rating / Server	Power Supply Inlet
IBM G7028	100W	1	1	0.465A	0.253A	IEC320 C14
IBM G8000	150W	2	2	1.5A	0.7A	IEC320 C14
IBM G8052	200W	2	2	1.7A	0.9A	IEC320 C14
IBM G8124	275W	2	2	2.75A	1.15A	IEC320 C14
IBM G8264	450W	2	2	3.125A	1.630A	IEC320 C14
IBM G8316	450W	2	2	3.125A	1.630A	IEC320 C14
IBM J48E (4273-48E)	320W	1	2	5.5A	2.25A	IEC320 C14
IBM B48Y (4002AY4)	210W	1	2	2.8A	1.2A	IEC320 C14
IBM B24X	210W	1	2	2.8A	1.2A	IEC320 C14

© IBM Corporation 2012

IBM System x Server Label Rating

Server	Power Supply Wattage	Power Supplies		Server Ratings			Redundant @ 100-127VAC
		Standard	Max	100-127VAC	200-208VAC	220-240VAC	
x3100 (4348)	310W	1	1	4.5A	2.25A		-
x3100 M3 (4253)	350W	1	1	4.9A	2.4A		-
x3100 M4 (2582)	300W	1	1	6A	3A		-
x3100 M4 (2582)	350W	1	1	7A	3.5A		-
x3105 (4347)	310W	1	1	4.5A	2.25A		-
x3200 (4362, 4363)	400W	1	1	5.5A	2.75A		-
x3200 (4362, 4363)	430W	1	2	5.5A	2.75A		Yes
x3200 M2 (4367, 4368)	401W	1	1	5.5A	2.75A		-
x3200 M2 (4367, 4368)	430W	1	2	5.5A	2.75A		Yes
x3200 M2 (9234)	400W	1	1	5.5A	2.75A		-
x3200 M2 (9234)	430W	1	2	5.5A	2.75A		Yes
x3200 M3 (7327, 7328)	401W	1	1	5.5A	2.75A		-
x3200 M3 (7327, 7328)	430W	1	2	5.5A	2.75A		Yes
x3250 (4364, 4365)	350W	1	1	6A	3A		-
x3250 M2 (4190, 4194)	351W	1	1	4.5A	2.25A		-
x3250 M3 (4251, 4252)	351W	1	1	4.5A	2.25A		-
x3250 M4 (2583)	300W	1	1	6A	3A		-
x3250 M4 (2583)	460W	1	2	5.3A	2.6A		Yes
x3250 M5 (5458)	460W	1	2	5.3A	2.6A		Yes
x3350 (4192, 4193)	450W	1	2	4.1A	2A		Yes
x3250 M5 (5458)	300W	1	1	6A	3A		-
x3250 M5 (5458)	460W	1	2	5.3A	2.6A		Yes
x3300 M4 (7382)	460W	1	1	5.3A	2.6A		Yes
x3300 M4 (7382)	550W	1	2	6.5A	3.3A		Yes
x3300 M4 (7382)	750W	1	2	8.9A	4.5A		Yes
x3400 (7973, 7974)	670W	1	1	5A	2.5A		-
x3400 (7975, 7976)	835W	1	2	6.5A	3.25A		Yes
x3400 M2 (7836, 7837)	670W	1	1	10A	5A		-
x3400 M2 (7836, 7837)	920W	1	2	10A	5A		Yes
x3400 M3 (7378, 7379)	670W	1	1	10A	5A		-
x3400 M3 (7378, 7379	920W	1	2	10A	5A		Yes
x3450 (7948)	600W	1	1	7A	3.5A		-
x3455 (7984)	650W	1	1	6.1A	3.0A		-
x3455 (7940, 7941)	650W	1	1	6.1A	3.0A		-
x3500 (7977)	835W	1	2	6.5A	3.25A		Yes
x3500 M2 (7839)	670W	1	2	10A	5A		-
x3500 M2 (7839)	920W	1	2	10A	5A		Yes
x3500 M3 (7380)	670W	1	2	10A	5A		-
x3500 M3 (7380)	920W	1	2	10A	5A		Yes
x3500 M4 (7383)	750W	1	2	8.9A	4.5A		Yes
x3500 M4 (7383)	900W	1	2	10A	5A		Yes
x3530 M4 (7160)	460W	1	2	5.3A	2.6A		Yes
x3530 M4 (7160)	675W	1	2	7.8A	3.8A		Yes
x3550 (7879)	670W	1	2	7A	3.5A		Yes
x3550 M2 (7946)	675W	1	2	7.8A	3.8A		Yes
x3550 M3 (7944)	460W	1	2	5.3A	2.6A		Yes
x3550 M4 (7914)	550W	1	2	6.5A	3.3A		Yes
x3550 M4 (7914)	750W	1	2	8.9A	4.5A		Yes
x3550 M3 (7944)	675W *	1	2	7.8A	3.8A		Yes
x3620 M3 (7376)	460W	1	2	5.3A	2.6A		Yes
x3620 M3 (7376)	675W	1	2	7.8A	3.8A		Yes
x3630 M3 (7377)	675W	1	2	7.8A	3.8A		Yes
x3630 M4 (7158)	550W	1	2	6.5A	3.3A		Yes
x3630 M4 (7158)	750W	1	2	8.9A	4.5A		Yes
x3650 (7979)	835W	1	2	9.7A	4.85A		Yes
x3650 T (7980)	600W	2	2	6A	3A		Yes

* – Includes High Efficiency 675W power supply as well as the original 675W power supply.

© IBM Corporation 2012

IBM System x Server Label Rating – Continued

Server	Power Supply Wattage	Power Supplies		Server Ratings			Redundant @ 100-127VAC
		Standard	Max	100-127VAC	200-208VAC	220-240VAC	
x3650 M2 (7838)	675W	1	2	7.8A	3.8A		Yes
x3650 M2 (7947)	675W	1	2	7.8A	3.8A		Yes
x3650 M3 (7945)	460W	1	2	5.3A	2.6A		Yes
x3650 M3 (7945)	675W *	1	2	7.8A	3.8A		Yes
x3650 M4 (7915)	550W	1	2	6.5A	3.3A		Yes
x3650 M4 (7915)	750W	1	2	8.9A	4.5A		Yes
x3650 M4 (7915)	900W	1	2	10A	5A		Yes
x3650 M4 BD (5466)	750W	1	2	8.9A	4.5A		Yes
x3650 M4 BD (5466)	900W	1	2	10A	5A		Yes
x3650 M4 HD (5460)	550W	1	2	6.5A	3.3A		Yes
x3650 M4 HD (5460)	750W	1	2	8.9A	4.5A		Yes
x3650 M4 HD (5460)	900W	1	2	10A	5A		Yes
x3655 (7985)	835W	1	2	9.7A	4.85A		Yes
x3690 X5 (7147, 7148)	675W	1	1	7.8A	3.8A		-
x3690 X5 (7147, 7148)	675W	2	4				Yes
			Server Rating	15.6A	7.6A		Yes
			Power Supply Rating (per plug)	7.8A	3.8A		Yes
x3750 M4 (8722)	900W	1	2	10A	5A		Yes
x3750 M4 (8722)	1400W	1	2	10A **	8A		Yes
x3755 (8877, 7163)	1500W	1	2	17.6A	8.8A		No
3755 M3 (7164)	1100W	1	1	12	6.7		-
3755 M3 (7164)	1100W	2	3				Yes
			Server Rating	19	11.6		Yes
			Power Supply Rating (per plug)	12	6.7		Yes
x3800 (8866)	775W	2	3	18.4A	9.2A		Yes
x3850 (8863, 8864)	1300W	1	2	15.75A	7.875A		No
x3850/3950 M2 (7141)	1440W	1	2	17.2A	8A		No
x3850/3950 M2 (7233)	1440W	1	2	17.2A	8A		No
x3850 X5 (7143, 7145)	1975W	2	2	20A	12A	10A	No
x3950 (8872, 8878)	1300W	2	2	15.75A	7.875A		No

** – The 1400W power supply drops to 900W output when operating in the 100-127VAC range.

IBM Storage Label Rating

Storage Device	Power Supply Wattage	100-127VAC Rating / Server	200-240VAC Rating / Server
DS3200	515W	3.9A	1.95A
DS3300	515W	3.9A	1.95A
DS3400	515W	3.9A	1.95A
DS3512	385W	3.8A	1.9A
DS3524	330W	3.8A	1.9A
DS4100	390W	3.01A	1.57A
DS4200	390W	4.54A	2.27A
DS4800	390W	5A	2.25A
DS5020	600W	6A	2.5A
DS5100	580W	5.4A	2.25A
DS5300	580W	5.4A	2.25A
EXP420	600W	4.54A	2.27A
EXP500	390W	3.9A	1.98A
EXP700	390W	3.9A	1.98A
EXP710	390W	3.9A	1.98A
EXP810	600W	4.54A	2.27A
EXP3000	390W	3.9A	1.98A
EXP3500	330W	3.8A	1.9A
EXP5000	580W	5.4A	2.25A
EXP520	600W	6A	2.5A
Storwize V7000	580W	8A	3A
Storwize V7000	764W	10A	6A

© IBM Corporation 2012

IBM iDataPlex Chassis Label Rating

Chassis	Slot Configuration	Power Supply Wattage	Number Power Supplies		Chassis Rating
			Standard	Max	
2U Flex Chassis (7831, 6385)	2 Planars	900W High Efficiency	1	1	100VAC – 8.62A 110VAC – 7.71A 115VAC – 7.35A 120VAC – 7.00A 127VAC – 6.63A 200VAC – 4.19A 208VAC – 3.98A 220VAC – 3.81A 230VAC – 3.61A 240VAC – 3.46A
2U Flex Chassis (7831, 6385)	1 Planar with I/O Tray	900W High Efficiency	1	1	100VAC – 5.90A 110VAC – 5.28A 115VAC – 5.01A 120VAC – 4.83A 127VAC – 4.61A 200VAC – 2.93A 208VAC – 2.83A 220VAC – 2.68A 230VAC – 2.57A 240VAC – 2.47A
2U Flex Chassis (7381, 6385)	1 Planar with Storage Tray	900W High Efficiency	1	1	100VAC – 5.54A 110VAC – 4.89 A 115VAC – 4.67A 120VAC – 4.44A 127VAC – 4.20A 200VAC – 2.67A 208VAC – 2.56A 220VAC – 2.43A 230VAC – 2.33A 240VAC – 2.24A
3U Storage Chassis (7834, 6386)		900W High Efficiency	1	1	100VAC – 7.61A 110VAC – 6.90A 115VAC – 6.52A 120VAC – 6.28A 127VAC – 5.90A 200VAC – 3.73A 208VAC – 3.59A 220VAC – 3.37A 230VAC – 3.24A 240VAC – 3.13A

Table continued on next page

© IBM Corporation 2012

IBM iDataPlex Chassis Label Rating – Continued

Chassis	Slot Configuration	Power Supply Wattage	Number Power Supplies		Chassis Rating
			Standard	Max	
2U Flex Chassis (7831, 6385)	2 Planars	Dual 750W Power Supply	2	2	200VAC – 3.90A 208VAC – 3.80A 220VAC – 3.53A 230VAC – 3.38A 240VAC – 3.22A
2U Flex Chassis (7831, 6385)	1 Planar with I/O Tray	Dual 750W Power Supply	2	2	200VAC – 2.37A 208VAC – 2.27A 220VAC – 2.15A 230VAC – 2.05A 240VAC – 1.97A
2U Flex Chassis (7381, 6385)	1 Planar with Storage Tray	Dual 750W Power Supply	2	2	200VAC – 2.43A 208VAC – 2.32A 220VAC – 2.19A 230VAC – 2.11A 240VAC – 1.99A
3U Storage Chassis (7834, 6386)		Dual 750W Power Supply	2	2	200VAC – 2.89A 208VAC – 2.76A 220VAC – 2.61A 230VAC – 2.51A 240VAC – 2.39A

IBM xSeries Server Label Rating

Server	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	100-127VAC Rating / Server	200-240VAC Rating / Server	Redundant @ 100-127V
x100	310W	1	1	4.5A	2.25A	-
x206	400W	1	1	5.5A	2.75A	-
x206	430W	1	2	5.5A	2.75A	Yes
x226	530W	1	1	7A	3.5A	-
x226	514W	1	2	7A	3.5A	Yes
x236	670W	1	2	8.93A	4.465A	Yes
x255	370W	2	4	10A	5A	Yes
x260	775W	2	3	18.4	9.2A	No
x306	350W	1	1	4.3A	2.15A	-
x335	332W	1	1	4A	2A	-
x335	411W	1	1	3.5A	1.75A	-
x336	585W	1	2	5.5A	2.75A	Yes
x346	625W	1	2	8.3A	4.15A	Yes
x366	1300W	1	2	15.75A	7.875A	No
x445	1200W	2	2	9.5A	4.75A	No
x445 16-way	1200W	4	4	19A	9.5A	No
x460	1300W	2	2	15.75A	7.875A	No

© IBM Corporation 2012

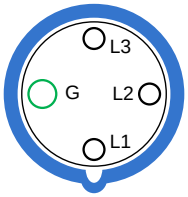
IEC 309 Pin & Sleeve Plug Decode

4	60	R	9	W
Pin Configuration	**Amperage**	**Device Type**	**Polarization**	**Environmental Rating**
3 - 2 Pole + G 4 - 3 Pole + G 5 – 3 Pole + N + G	20 30 32 60 63 100	P - Plug C - Connector R - Receptacle B - Inlet	Clock Position Of Female Sleeve	W-WATERTIGHT (SCREW CAP & LOCKING RING)

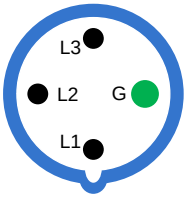
Color	Voltage Rating
Yellow	100V - 130V
Orange	125V/250V
Blue	200V - 250V
Gray	277V
Red	380V - 480V
Black	500V - 690V

- Example
  - IEC309 3P+G Plug
  - 60amp/250V three-phase
  - Hubbell Connector listing 460C9W IP-67
  - P/N HBL460C9W

Female Sleeve



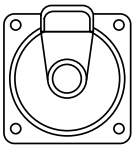
Male Pin



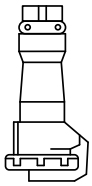
Pin Configuration Significance

3 Pins = 1ph
4 Pins = 3ph Δ
5 Pins = 3ph Y

Female Ends

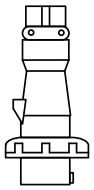


Receptacle

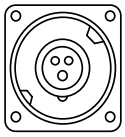


Connector

Male Ends



Plug



Inlet

Ingress Protection (IP) Decode

Code Letters	First Number	Second Number
Ingress Protection	**Protection Against Ingress of Solid Foreign Objects**	**Protection Against Ingress of Water with Harmful Effects**
IP	0 – No Protection 1 ≥ 50mm Diameter 2 ≥ 12.5mm Diameter 3 ≥ 2.5mm Diameter 4 ≥ 1.0mm Diameter 5 – Dust-Protected 6 – Dust-Tight	0 – No Protection 1 – Vertically Dripping 2 – Dripping At 15° Of Tilt 3 – Spraying Up To 60° Of Tilt 4 – Splashing 5 – Jetting 6 – Power Jetting 7 – Temporary Immersion 8 – Continuous Immersion

First Number: degree of protection for persons against access of hazardous parts inside the enclosure and/or against foreign objects.

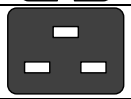
Second Number: degree of protection of equipment inside enclosures against damage from ingress of water.

Ingress Protection (IP) is defined in IEC 60529 Standard.

Example: IP67 = Ingress Protection / Dust-Tight / Temporary Immersion

© IBM Corporation 2012

IEC 320 Connectors

Name	Connector	AMP Rating	Use
C5 – Female C6 – Male		2.5A	Laptop Power Supplies And Other Portable Power Supplies
C7 – Female C8 – Male		2.5A	Laptop Power Supplies And Other Portable Power Supplies
C13 – Female C14 – Male		10A	Desktop Computers, Monitors, Switches, And Servers
C15 – Female C16 – Male		10A	Used In Hot Conditions Since It Is Rated To 120^0 C (248^0F), Unlike C13/C14 Which Is Rated To 70^0 C (158^0 F)
C19 – Female C20 – Male		16A	Blade Chassis, High-power Servers, UPSs, PDUs, And Other High Current Equipment

Note: IEC 320 has changed to IEC 60320

Rong Feng RF-203P Connector

Name	Connector	AMP Rating	Use
RF-203P		10/15A	Systems needing connection to a DC power source

32A Three Phase Wye Power Calculations

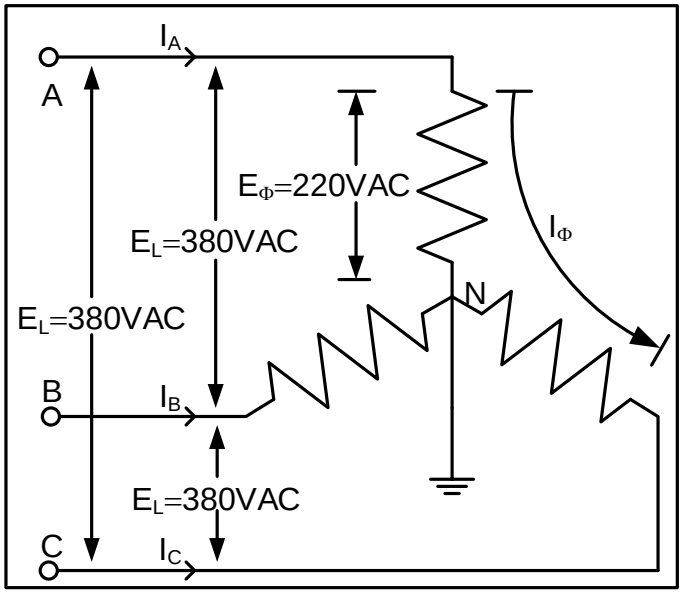
$$I_A = I_B = I_C = I_L = I_\Phi = 32A$$

$$P_\Phi = E_{\Phi Y} \times I_{\Phi Y} \times pf \quad (W)$$

$$\begin{aligned} P_{TOTAL} &= 3 \times P_\Phi \\ &= 3 \times E_L/\sqrt{3} \times I_\Phi \times pf \\ &= \sqrt{3} \times E_L \times I_L \times pf \\ &= \sqrt{3} \times 380VAC \times 32A \times 1 \\ &= 21061W \end{aligned}$$

$$E_{AN} = E_{BN} = E_{CN} = E_\Phi$$

$$= \frac{E_L}{\sqrt{3}} = \frac{380VAC}{\sqrt{3}} = 220VAC$$



© IBM Corporation 2012

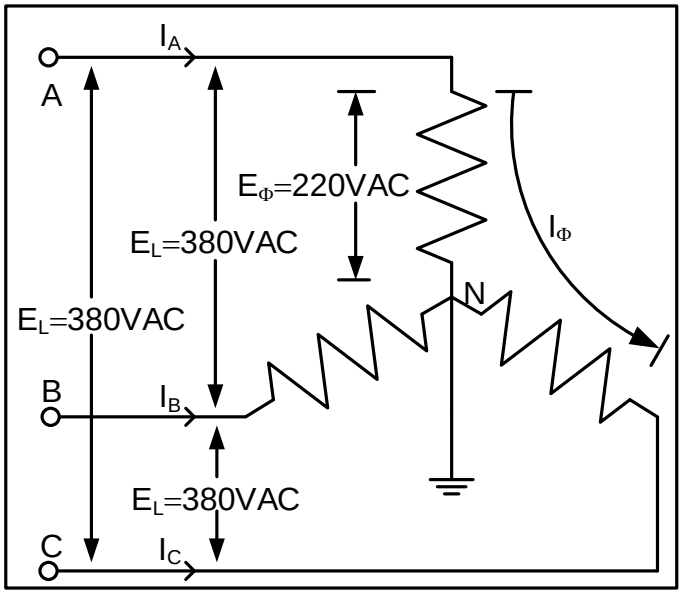
16A Three Phase Wye Power Calculations

$I_A = I_B = I_C = I_L = I_\Phi = 16A$

$P_\Phi = E_{\Phi Y} \times I_{\Phi Y} \times pf \quad (W)$

$$P_{TOTAL} = 3 \times P_\Phi$$
$$= 3 \times E_L/\sqrt{3} \times I_\Phi \times pf$$
$$= \sqrt{3} \times E_L \times I_L \times pf$$
$$= \sqrt{3} \times 380VAC \times 16A \times 1$$
$$= 10530W$$

$$E_{AN} = E_{BN} = E_{CN} = E_\Phi$$
$$= \frac{E_L}{\sqrt{3}} = \frac{380VAC}{\sqrt{3}} = 220VAC$$



IBM PDU Installation Manuals

Rack, PDU, UPS, and KVM Product Publications Quick Reference
http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/TD105795

Helpful Links

Latest copy of this document
http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101615

Other resources related to power and cooling
http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS4401

IBM System x and BladeCenter Power Configurator
http://www.ibm.com/systems/bladecenter/resources/powerconfig.html

Hubbell - Pin & Sleeve Plug/Outlet Catalog (Includes IEC309 Outlets)
http://www.hubbellcatalog.com/wiring/catalogpages/section-E.pdf

Configuration and Options Guide (COG) - Servers and IntelliStation®
http://www.ibm.com/jct01004c/systems/support/supportsite.wss/docdisplay?lndocid=SCOD-3ZVQ5W&brandind=5000020

IBM BladeCenter and System x Reference Sheets
http://www.redbooks.ibm.com/Redbooks.nsf/pages/xref?Open

Official IBM Visio Stencils
http://www.visiocafe.com/ibm.htm

IBM, the IBM Logo, BladeCenter, DPI, IntelliStation, iDataPlex, and System x are registered trademarks or trademarks of International Business Machines Corporation in the United States, other countries or both. For a list of additional IBM trademarks, please see http://ibm.com/legal/copytrade.shtml.

Other company, product or service names may be trademarks or service marks of others.

© IBM Corporation 2012